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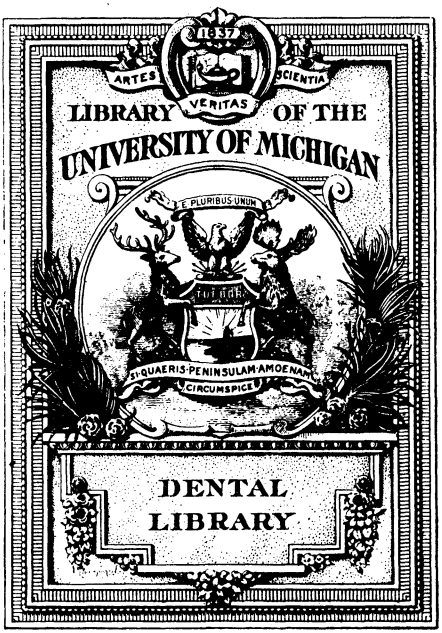
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AMERICAN DENTAL JOURNAL

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OUR POST GRADUATE COURSE

PORCELAIN.

T. ELBANAN POWELL, D. D. S.

One of the most difficult problems in baking porcelain is the "shade" problem. It is easy enough to bake porcelain which will apparently match the shade of the tooth when placed in position without cement back of it; but the cement being a substance which absorbs the rays of light, instead of reflecting it back to the eye, makes the otherwise simple problem a complex one.

The law of combining colors does not apply here because colors ordinarily are laid onto some basic substance which acts as a reflecting medium.

So we shall say here very little about primary colors because, in addition to the reason given above, there is another equally good reason; that is, the manufacturers of porcelain bodies have carefully worked out the shade problem for us. However, the three primary color sensations are red, green, and violet, and this is all "in your eye," because, if the physical construction of the eye is such that it cannot apprehend one of these three colors, color blindness is the result; for color blindness depends upon a color system with two colors, whereas the normal eye depends upon a system with three colors. "When all three primary colors come to the eye with equal strength the resultant is white."

The colored appearance of the color pigment is not due to any inherent property in the substance itself, but to its effect on ordinary light. Other colors are the results of differentiation according to the relative strength of the three component parts.

All bodies reflect light to some extent except perfect black; lamp black, being the nearest to perfect black, reflects three per cent.

The color of any body depends on its selective absorption, or its per cent of reflective ability.

It is estimated that about four per cent of all men are blind to either red or green; but one is rarely found who is "violet blind." It is said that temporary violent blindness may be produced by the drug santonine. Ordinary color blindness, that is red or green color blindness, is frequently produced by the excessive use of tobacco.

Some authorities give red, yellow and blue as the three primary colors; but this is an older classification than the other and any combination of these colors *per se* will not produce a body whose selective absorption is such as will give a perfect white.

A combination of red and blue will produce violet and as we have seen it requires violet, red, and green to produce a pure white color; so that yellow is not necessary but would in fact destroy the perfect harmonious blend.

Our perceptive faculties are such that every sensation must be conveyed by vibration of some sort. The sense of hearing is attuned to the sound waves to such an extent that the least discord will cause discomfort and annoyance, and the great masters struggling to evolve an understandable philosophy of music discovered as if by inspiration a great law which governs tone building, namely this: All music has as its foundation three prime tones on which the cadences are constructed. These cadences or "prime chords" may be readily discerned if one follows closely the harmony of some old hymn. The three basic chords are easily separated from the secondary or incidental tones.

It is interesting to know that the Hindoos have advanced a theory which if true, establishes a close relationship between tone and color; both are conveyed to the perceptive centers by vibratory process.

To recognize proper tone colors in either music or art, education and culture are necessary. Logically, it follows that no cultured person will ask his dentist to "sell him a gold crown" for an anterior tooth. The gold crown "in front" is as great an offense to the artistic temperament as is the "rag time ecstacy" to the cultured musician. Gold crowns and rag time may be useful but should be kept in the "background."

No man can be taught to become an expert in blending colors

until he himself has travelled the track of experience and has learned to profit by his failures. So I desire to lay down a few rules which may serve as guide posts as you are travelling along the way. *Study* the teeth in the mouth until you are sure of all the shades that enter into their composition. Then isolate that part which you desire to reproduce.

Choosing the shade point which in your opinion matches the part of the tooth which you wish to reproduce, remove that point from the ring, and compare as much of the tip as will correspond in size to the restoration. It is impossible to match the shade of a portion of a tooth with a shade point several times the size of the restoration. For instance, if the basic element in the tooth is brown, and the point of the tooth is somewhat blue, cover the blue while matching the brown, and then vice versa. In this way you will get the actual shades which when properly combined will blend when in position with their surroundings.

If you are matching the teeth with a dry point, make sure that you have the teeth as nearly as possible in the same condition. Of course, you cannot take into account in this way the moisture within the tooth itself, and this is no small matter. Moisture aids wonderfully in the reflection of light and it is impossible to have within the porcelain itself a corresponding amount of moisture.

You will not succeed for a long time in shading up your porcelain work to blend with the teeth, but with persistence and care, you will approximate the natural color to such an extent that you will soon be disgusted with gold.

Dr. Mitchell read a paper a few years ago before the Odontographic Society of Chicago in which he advocated "mottling" the porcelain, so that it would correspond to the variations which nature often gives to the teeth. This is an excellent idea and suggests to us desirability of using oil colors as manufactured by Brewster of Chicago to make our work more like that of nature.

Dr. Reeves of Chicago has long advocated building the porcelain in layers within the matrix, beginning with brown or yellow or whatever shade the dentine happens to be, and finishing with the enamel which will most nearly blend with the rest of the tooth. Dr. Reeves has certainly obtained some beautiful results from this method, but I have seen just as beautiful results from using the white body as a

foundation adding to this shades found in the tooth.

Porcelain is translucent to a certain extent, permitting the rays of light to shine through until these rays encounter the cement where the most of them are absorbed, cement being a poor medium for reflecting light.

The absorption of the rays of light by the cement can be largely obviated by the use of Brewster's matrix lining, which, it is claimed will not absorb the rays of light but will reflect them back to the eye, giving life and vitality to the appearance of the inlay. However, when this matrix lining is used, the other shades should be somewhat darker than is indicated by the tooth which you desire to match; and this because the matrix lining lightens the shade in the mouth.

Some men take so much of one shade and so much of another and mix these shades together to secure the desired color. When this is done a definite amount of each should be taken and these two spatulated together. By the way, too little attention is given to spatulation, because all bodies are mixed in liquid, dried and then mortared, but many specks and nodules of color remain intact and if not spatulated down thoroughly by the dentist will spoil the porcelain when finished.

A spatula should never be laid down without being first wiped dry; for should there be any rust on the spatula this oxide of iron will "show up" in the finished inlay.

(To be continued.)

OPERATIVE DENTISTRY.

BY R. B. TULLER, D .D. S.,
CLINICAL PROFESSOR OF OPERATIVE DENTISTRY, CHICAGO COLLEGE OF DENTAL SURGERY.

AMALGAM INLAYS AND LOW FUSING INLAYS.

At first thought it may seem to many that one cannot be serious in speaking of amalgam inlays. Such inlays, however, have been made as a matter of fact, and with sufficient justification to make a discussion of the subject here pertinent.

It is not contended that an amalgam inlay has any more to commend it in the inlay field than it has as a filling material in the usual way of using it; but it is well known that as an inexpensive material and a good tooth preserver—if of good quality and it is properly used—it goes to save thousands and thousands of teeth for those who cannot afford gold and other expensive materials.

The grounds upon which it is made into an inlay instead of packing directly into the tooth cavity, are these: First it is not (comparatively) expensive; then it does not require any special paraphernalia or machine; and again, it can be made denser, and almost all the finishing with its nerve rasping strain may be done out of the mouth.

It is in large restorations that amalgam would be considered as an inlay material, and not in small cavities. In large molar and bicuspid restorations the expense of gold is too much to be considered by many people not well to do in the world. When amalgam is placed in a cavity surrounded or nearly so by walls, there is little danger of dislodgement, even if used (without specially favoring it) in masticating within a short time after it is inserted; but large contours cannot be safely used for some hours after insertion; and neither can they be safely subjected to the strain of finishing with disks and strips until well hardened. A large variety of small and medium cavities would not come into the inlay category.

Another thing favoring amalgam for an inlay, instead of packnig directly into the cavity, is that in many cases it is easier for both the dentist and patient to prepare for an inlay, using sharp cutting stone points lubricated freely with cool water. This preparation of

a cavity reduces the disagreeable, not to say painful, features very materially; and if the proper stone is used reduces the time. Then, amalgam, packed out of the mouth in a reproduction of the cavity in plaster or cement, permits of more perfect and certain condensation and with less mercury; and all margins can be scrutinized closely, and the material trimmed and contoured with accuracy. Allowed to harden dry and undisturbed, over night perhaps, it becomes very dense, with no danger of yielding under strain of mastication. This is of some importance with large restorations unsupported by good walls.

And then comes the finishing. Usually, if amalgam fillings are as carefully dressed down close to margins and polished as they shoud be, it must generally be done at a second sitting, and with many patients, with any filling to be dressed down, this ordeal is one of the most disagreeable operations they are called upon to submit to. As concerns the dentist, the finishing done, as with gold inlays, out of the mouth, is easier and may be done with greater perfection, leaving but little to be done on the occlusal surface perhaps, to correct articulation. A highly polished amalgam certainly presents a pleasing appearance, and with a little special attention on the part of the patient may be kept bright. When the impression for a large restoration is taken the adjoining teeth should be included, and the bite is sometimes necessary.

When the inlay is ready to set, if the various steps of the work have been done with proper care, it will be found to fit with the greatest accuracy. Its setting is done of course with inlay cement as is done with any other inlay.

Bearing in mind that amalgam has not the strength of gold, if extensions are to be made into fissures for better anchorage, etc., calculation should be made in preparation of cavity, so that such extensions in the inlay shall not be too frail. However the substance made up in this way will have the maximum of strength that can be had in amalgam.

All the benefits accredited to inlay work over the usual filling are obtained in amalgam inlays; except as concerns strength as compared with gold, and color as compared with gold or porcelain. It is perhaps a question in some cases whether a well molded, well contoured and polished amalgam is not more pleasing to sight than gold,

as concerns some classes of tooth restoration. The fresh polished amalgam has the whiteness of pure silver. Oxidation of the surface may be prevented or overcome largely, by a little special care on the part of the wearer. Irritation from thermal changes due to the excellent conductivity of metal, may be provided against as with any other metal inlay or filling—is provided against to some extent by the cement which holds it. It is easy to bur out a portion of the pulpal wall to increase the thickness of cement at that point if desired. Pins may be used when indicated by setting them in lightly so they will come away in the impression, but a pin metal must be used that will stand the contact of mercury without detriment.

To sum up with, the advantages of an amalgam inlay are reduction of work in preparing the cavity, being able to dismiss the patient after getting a perfect impression, either in wax or modeling compound, and avoiding the use of the rubber dam with its particular disagreeable features; and then being able to set the finished inlay in a few moments at another sitting. And still further, requiring no special outfit or press to force the substance into the mold, as is mostly necessary with the casting method of inlay making.

However, in the way of casting, if one prefers that way and is prepared, very inexpensive inlays may be made of low fusing alloys. Some alloys have been specially produced for inlay work, varying in quality and hardness, or the point of melting.

In using low fusing such as Watt's or Mellottes' metal the operation of casting differs from that of casting gold or alloys of high melting point; thus, low alloys should be cast into a mold cool enough to chill it promptly, unless one can maintain the pressure on it until it does chill. To get rid o" the wax model the procedure is to heat up the flask until the wax is at least completely absorbed by the porous investment, and for gold it is heated high enough to burn out the wax, and no doubt many degrees beyond that. This, however, is so much below the degree at which the gold is forced in that it promptly chills so that pressure can be discontinued in a moment.

It can be seen that if a low fusing metal was forced into a mold at this high temperature it would remain liquid for some time; hence the pressure must be maintained accordingly.

In the application of steam, it is produced instantly in using high grade metals, by the heat of both the metal and the flask;

but if low fusing metal is used in cool or warm flasks it would not produce steam; and if the flask was hot enough to do it, the pressure would be off before the metal became cool; so steam in the usual way of using it would hardly be available with low fusing alloys.

Compressed air or gas would maintain pressure, but the writer is assured by some who have experimented with low fusing material, that it may be quickly melted in the crucible of flask at low heat with the blow pipe, and readily forced into the mold by one's thumb, protected with a dry pad of asbestos or even of cotton or cloth or piece of chamois. Some of the low fusing metals fuse in a temperature as low as boiling water. Mellotte's metal melts at something above that. A better alloy for the purpose contains some aluminum and is still classed as low fusing, though higher fusing than those mentioned above.

Let us repeat: it is essential to remember that unless provision is made to maintain pressure as long as desired, the flask should be at a little lower temperature than the fusing point of the metal used.

(To be continued.)

IN ONE OPERATION IF POSSIBLE.

When scaling a tooth we should not do this partly today and tell the patient to come again tomorrow to have it completed; do not keep opening the wound by continued scaling or probing. When a surgeon makes a wound he wants it to heal as soon as possible. If he is compelled to open it up again he considers it a bad piece of work. If you scale but one tooth at each sitting do it thoroughly and finally; then you will have done your work on a scientific basis. Don't keep pricking at the gums all the time and then opening wounds which run the risk of becoming reinfected. This, I believe, is one of the great advantages of Dr. Younger's and Dr. Good's methods—they make but one operation. I believe if we shall adopt these surgical methods in connection with the prophylaxis treatment we shall all come to the conclusion that pyorrhea alveolaris is a curable disease. I can almost assure you that pyorrhea is curable if treated along these lines, and that everyone can be successful with it.—*Dr. N. S. Hoff, Register.*

DENTAL PATHOLOGY.

BY GEORGE W. COOK, B. S., D. D. S., CHICAGO, ILL.,
DEAN OF DENTAL DEPARTMENT, UNIVERSITY OF ILLINOIS; PROFESSOR OF BACTERIOLOGY AND PATHOLOGY, UNIVERSITY OF ILLINOIS.

The presence of bacteria and other organic micro-organisms and the relation of bacteria to morbid phenomena as they are manifested in diseased tissue, is no longer a question of doubt in the minds of those who are familiar with diseases. Since we recognize that the nose, throat and upper air passages, gastro-intestinal and genito urinary tract of the human individual possess more or less the varying forms of these organisms under ordinary circumstances, we cannot longer stop to question the doubt of the important relations these organisms bear to the general pathologists, as well as the symptomatology of the various phenomena of disease in the human body.

Since the internal openings of the body, as well as the external surface of the human individual, are so constantly in contact with these bacteria, we ofttimes are surprised to know that the presence of these organisms in the tissues of the body are so infrequent. But when we think of the power of resistance of the mucous epithelial structure, and that the protective influence of the subcutaneous surface is such as to constantly establish a bearer to the entrance of these organisms, we can understand more thoroughly the reasons why disease is not more frequently inaugurated than it is.

The relation of bacteria to certain disease processes is one that has created most profound thought of any etiological factor that enters into the pathology that we call modern, except, perhaps, certain pathogenic germs. When we say pathogenic the word carries with it relative meanings as what really is pathogenic; because we have found under some circumstances that some organisms are extremely pathogenic in one instance and in another instance where they apparently ought to be just as pathogenic there are no manifestations of the disease process being established.

Of course under this head would naturally come influences of what we at the present time consider immunity. While considering the immunity of certain living structures to other forms of destructive

agents it is important to consider always that phase of the question as to the power of the invading host of maintaining its disease-producing powers, and under what circumstances that power can be maintained under one environing condition, while if transferred to a different field it would be incapable of maintaining such a power in the new environments.

Diodorus and Hippocrates who are designated as the fathers of medicine, recognized even in their day the importance of knowing the cause of why in the midst of apparently general physiological activities of man he should be stricken with a malady that would incapacitate the functions of his body to resist certain disease processes that had taken hold of it. In fact to know the cause of things is the question that has been uppermost in the mind of man ever since his conception of the physical existence of living organisms. However it will be remembered that even in those days, as well as at the present time, men were satisfied with the vaguest conceptions as to the real cause of anything. The search after disease soon became only an imaginary cause, and the religious doctrines of the times placed the treatment of disease in the hands of the priest graft and disease was established as something coming from the devil.

It would be interesting as well as profitable if we were to study the conceptions hitherto held concerning the processes and causations of disease. The complexity of the phenomena of the origin of disease, as well as that of the conservation of energy, the sciences everywhere struggled through various theories of what might be termed mechanical stages and then through the monistic stages. The accumulation of facts and the proper establishment of data have been sufficient to place many of the obscure phenomena of living things on comparatively simple scientific bases. At the present time we look upon the last half century as a period rich in discoveries, and perhaps the most fruitful fields of investigations have been those along clear pathological lines.

The factors that have entered into the real cause of disease processes have been brought forth one at a time as evidences of the great field of research opened up to farther and more profound study on each point as they present themselves. If we look over the period when Virchow established what is at the present time called cellular pathology, we will find that along with his discoveries came that

period that marks some of the greatest researches of the century in microscopic anatomy. In the founding of the Virchow school of pathology there rose with it a dogma that more or less obscured the true value of the discoveries of that time; for it was dogmatically asserted that the essence of disease lay in the cell of the tissue itself. While this assertion was founded upon certain organic changes in the cellular structure it brought a one-sided theory to what afterward proved to be, to an extent, a fallacy; for in the discovery of bacteria and certain other parasitic life in connections with disease, it opened up a field of research that asserted, on the other hand, dogmatically, that disease was due to a parasitic life without any reference to what influence might be exerted internally to prevent the disease. But the researches of the last decade have changed these two dogmatic schools to harmonize the facts as found, that both the body and the bacteria play in their turn an important role in the establishment in certain disease processes. The environing conditions and inherited tendencies of the human economy, as well as the environing conditions and inherited tendencies of bacteria to produce disease, are today as well known as any of the facts in the establishment of scientific knowledge in other fields of research.

We identify certain bacterial forms with certain disease processes and call them the causes of disease, but really as a matter of fact, they only play one of the important roles in the drama of pathological findings.

Through the investigations of Haller, Reil and Johannes Muller the outside forces act upon the living substances in a certain way. The eye is so formed that it perceives light, the ear receives sounds, the glands secrete certain substancs, the muscle tissue contracts and maintains a certain irritability only when these particular tissues are acted upon by certain active stimuli. So it is with certain tissues and organs of the body, when they are acted upon by certain external causes they manifest certain well defined and unmistakable changes, in other words, they respond to these certain external parasitic forms of living substances in their own and peculiar manner. Therefore we have certain manifestations in tissues when they are acted upon by a particular micro-organism, in other words, when certain bacteria or germs enter the tissues of the body they meet with certain obstacles and when they attempt there

to spread and continue their cellular proliferation of their own specie, they must of necessity bring about certain manifestations in the tissues and organs of the body in which they are located. We then have established a disease. This disease process is the reaction of the tissues against a foreign substance. In some instances we will have death of the tissues or necrosis. If the bacteria proliferate in sufficient number in the tissues a certain number will be taken up by the circulating fluids of the body and it is possible to establish what is known as septicemia.

Some bacteria when introduced into living tissue instead of establishing at once the death of tissue they may establish an intense inflammation. This inflammation may be of a simple productive form of an inflammatory process and act only as a foreign agent producing an irritation of that particular tissue. If it acts as a progressive inflammatory process with an exudate there will follow all the characteristic tissue changes that take place in an inflammatory process. The extent at which this inflammatory process may take place is in accordance with the virulent properties of bacteria as well as the reactivity of the tissues involved.

It has been repeatedly shown that bacteria produce disease by their presence in the tissues, acting as a foreign agent or as a mechanical injury by producing certain toxic substances that are liberated from the bacterial cells themselves. The mechanical presence in the tissues has, perhaps, no severe influence, provided the bacteria do not produce any toxic product and liberate themselves in the tissues to act as a poison. But upon this point rests the fundamental principles underlying what we call infectious disease. It has been shown many times that if certain bacteria be grown in certain medias and the bacterial cell be removed from the media and this media be injected or placed in the tissues of the body, they will induce the characteristic symptoms with the pathological changes that are so characteristic of this particular kind of bacteria.

The phenomena of septic intoxication, that is so frequently produced from the growth of bacterial cells, brings about certain phenomena quite in the same way as though the bacterial cell was in the living tissue. The toxines that produce this phenomena are sometimes spoken of as toxalbumin. The toxines of bacteria should not be spoken of as ptomain. It will be observed that in the distinctive

findings of the two substances toxines are the products of the bacterial cell, while ptomains are of an alkaloidial-like substance produced by the decomposition of proteid bodies; in other words, ptomains are the result of the action of the bacteria on dead nitrogenous substance. So we are convinced that the action of bacteria on certain proteids cannot produce ptomains unless the substance to be acted upon has sufficient quantity of nitrogen out of which they can build a poisonous product.

It has been repeatedly shown that bacteria are able to construct their body substance out of various kinds of material. The fermentative products are usually placed under a different head than in which ptomains might be produced. Fermentation as we at the present understand it is bacteria asserting their activities on certain carbohydrates producing the well known compounds of fermentation, namely, acids, alderhydes and alcohol, while in ptomains we have a product that is the result of decomposition of nitrogenous substance by bacteria.

Nencki, Brieger and Vaughan succeeded in preparing an organic base of a definite chemical decomposition out of putrid fluids—fish, old cheese and spoiled milk. These alkaloidal-like substances as they appear in the tissues of the body are as a rule quite harmless. These chemical compounds that we find extracted from putrid fluids were looked upon for a long time as the most active agents in producing poison in certain decomposition processes. Vaughan extracted from decomposing cheese an alkaloidal-like substance that he called tyrotoxicon. There are many of these substances that have been worked out chemically and cannot fail to be of great interest in the causation of certain disease processes.

ORIGINAL CONTRIBUTIONS

TOOTHSOME TOPICS.

BY R. B. TULLER.

Say!

Our outo mobeel is in sight.

No, I don't mean out in front. Wether's too cold enny way.

But Pa sez you can jest bet she's a cummin' hummin'.

You see, pa's gone an' invented somepin' every dentist has got to hav, and that's a greas to put on the end of a drill so it don't hurt none and drills faster.

He sez it's a wunder some other durn fool didn't think of it afore; but they dident and now he's it.

I seen him borin' holes in a tooth brush an' zip! 'fore you could say jack robin son they was thru', an' the brush never turned a hair.

When workin' he first jabs his drill or burr in to a kake of sumpin' (that's the secret) and then jabs it inter the tooth, then inter the kake and then inter the tooth, an' the thing is dun. He tole me notter tell enny one that there wuz enny kokane in it, caus there aint.

We're goin' to sell it fer 5$ a kake an' a kake will last morne a munth or too, and then he's gotter hav a nother kake fer 5 dollars more an' so on an' so on an' so on; an' pa sez that'll help greece things at home some—as well as the auto machine;—huh?

He sez of course it is goin' to cost a little sumpin' fer rappers an' labels an' advertisements, and so we can't greas things at home fer awhile much, 'cept in the ole way wit butterine.

Then to begin with until we bild a factry, ma's goin' to make the kakes an' we ar all goin' to rap 'em up an' git em reddy to send out fer 5$, an' pa sez we git the five first. Gee!

Pa was a usin' it the other day on a pashunt an' she kep' a rigglin' an twistin' an' pa he sez, "What you actin' that way fer when it don't hurt nun?" an' she sed, "Well, I just can't help it, it gits on my nerves enny way." Then pa sez, "Well, I gess I might jest as well not use it, and it costs 5 dollars fer a little chunk, and is garanteed."

But she woodent hav that. She sed, "Oh, yes, you must use it, I couldn't stand it a second without." An' pa sez, "Ah, there it is, see?

I know'd you couldent; nobody can. It is the greatest stuff ever put up. Of course, if you are *nervous,* that ain't the falt ov me ner the stuff. But I *know* I don't hurt the tooth enny. It is allus frikshun that hurts the tooth, an' that's what I head off with my anty-hurt. An' say, Mrs. Blank, I want your testimonial." She sed, "All rite; if you on'y let me hav' a little rest between, an' not keeper goin' so steddy all the time. I do hait that borin' above all things; an' specially if she aint greeced. It never does hurt so *very* much, but it is the gittin' on my nerves that upsets me.—Oh, aint you mos' thru?"

So when she was reddy to go pa sez: "Now, if you will pleas' kindly sine right here: A boon to sufferin' humanity." An' she sine. "Now, if you'd git up sumpin' fer the nervz," she sed, an' pa sed he was goin' to—had gotter all figgered out, an' it wood lay nerves to feet a duch band; but he hatter charge a goodeel more fer the wirk, but it is wirth it. An' she jest sed, "Oh, my!" an' went.

Pa has got a hull lot of testermonals to print an' every one sez it is a dandy, an' they woodent never go to no dentist who didn't youze the Anty frikshun greas.

'Nother thing, pa's got a way he invented of sharpenin' his burz, an' that's jest holdin' a peace of emmery paper in his fingers an' runnin' the burz backwards, but as he coodent work a patent on it he's goin' to give that up to the perfeshun free gratus, if they bye the greas. He is a regular injeenous, pa is.

Yes, pa's a inventer all the time. He sez he invents new ways ov fillin' teeth every day, an' he's got a stone fillin' stuff almost prefected. He's got it all right in every way 'cept it takes frum 4 to 6 days to harden, but it is a cummin'. He's goin' to call it kon kreat an' it never will ware out an' it hardens wet.

Ma she's awful interested in pa these days with his prospecks, an' she sez he's got more to him than some peeple think; an' she's pickin' up herself sum. She's goin' to jine the Two O'Clock Wimmin's Club and play bridg, an' she's havin' some callin' cards printed, Mrs. Dr. Joel Jerkum, etc., etc; an' I've 'bout made up my mind it aint very dignerfied fer a perfeshnal man's sun to go chasin' on errants so much or cleanin' snow off the walk. I 'member what pa and ma sez: yer gotter look like reddy money enny way—an' specialie when yer got it comin'.

I think pa otter blong to a club. Bud Bimley sez his pa goes to the Illinois Club most every nite, and he ast me what club my pa

went to, and I jest tole him my pa hatter read a lot of papers an' do stunts at dentist meetings an' he didn't hav much time, but ever' now an' then he went down to the Illinois Central; an' Mr. bud Bimly felt kinder cheep cause his pa only went to the Illinois without any more to it.

Pa is gitten on fine now with cast inlays and things with the presser he invented hisself. He made a cast bridg the other day 9 feet long out of pure gold, silver and brass for a lady. Yes, sure it was 9 feet long or 9 teeth long, an' pa sed, "There! that's a wirk ov art," an' she shure did look fine.

The on'y troble wuz that it woodent go on both ends at wunst. When pa'd get one end on, the other would tip up; an' after some time pa sed, "The trobel is, it has bin 2 weeks sense I took the impress an' your mouth has changed. I see that I've gotter saw the thing in 2 an' rea'just it, an' then sodder up again; so he did, an' then he bust off a tooth, an' the lady did'nt get her bridge fer neerly a week, and pa didn't git his money he wuz countin' on, and haint yit. The lady wuz sore, 'cause she wuz goin' to a big bridg' party an' she couldent think of goin' without her bridg'. She's gotter on now, all rite, but she's a kickin. Sez the teeth ar too dark—she allus had white teeth. An' pa sed, "Madam on my honer them ar' White's teeth—genuine, an' they look fine."

All the same, he's up agin it, he sed, an' he sed if he could git the thing off he'd cast it—out of the window. He's wunderin' how he's goin' to gitter off. Sez he putter on with konk kreet an' she's been on 6 days. He'd hav to use dynermite to gitter off. "Dum a woman enny way"! he 'sploded.

"What's *that?*" ast ma. "You didn't talk that way when you wuz chasin' me!" Pa sed that was a different preposition. "All the same," he said, "a dum woman is sometimes to be desired."

Ma come back—she most allus does come back—an' sed: "Joel, dear, *you* didn't draw no dum one, an' don't you forgit it." "How can I?" sez pa. Ma haint no quitter first ner last. "I don't expect you to," she said, "not inless I git peralosis an' I don't feel it comin' on nun." Pa walked off. If he'd a sed enny more, ma had more back up her sleeve, I kno'.

I'm ginerally most all the time with ma in these sparrow matches —'cept when she gits after *me*. But pa is a awful smart man an' sure is a reg'lur ingenious. Wait til we git that bur greas goin'. Gee!

ABSTRACTS AND SELECTIONS.

A SYMPOSIUM OF FOUR PAPERS ON CAST GOLD INLAYS APPEARING IN THE JANUARY JOURNALS.*

Gold Inlays.

BY THOMAS E. WEEKS, D. D. S.

That metal in direct contact with dentin is not the best thing for all teeth is not a sentiment but a conviction in the minds of a constantly increasing number of operators. This is proven by the number of methods which have been advocated for lining the cavity with cement before the introduction of gold or amalgam.

It is not denied that many teeth have been saved by fillings of gold placed in direct contact with the dentin, but the fact remains that such fillings are not the most compatible with *all* of the conditions existing in many cases. Furthermore, the difficulties of a perfect technic and the strain upon both patient and operator attendant upon the proper performance of these operations are factors not to be overlooked.

Cemented fillings or inlays are not a new fad, but are the product of an evolution at the hands of some of the best technicians and most scientific men in the profession.

At first methods, materials and technic were too imperfect to insure the best results, except in the hands of the few, but today all these are so improved that perfect inlays may be made by all who possess even moderate ability.

In gold inlays this was made possible through the introduction of the complete technic, automatic casting machine and perfect materials for producing cast gold inlays by Dr. William H. Taggart.

In this operation there are five distinct steps: First, preparing the cavity. Second, carving the wax model. Third, investing this model in the flask. Fourth, causing the wax model to disappear and

*From Dentists' Magazine.

casting the inlay. Fifth, finishing the inlay and cementing it in the cavity.

In the preparation of the cavity there are four points to consider: First, such form as will permit the withdrawal of the wax without distortion. Second, such form of the gingival or pulpal walls as will provide so firm a *seat* for the filling that it will not rock on its base. Third, such retention form as will provide resistance against such stresses as would tend to *unseat* the filling. Fourth, such form of enamel margins as will protect the enamel from fracture and give such marginal form to the inlay as will prevent change under stress. (Proximal cavities in bicuspids and molars are the ones considered here.)

In the actual preparation of the cavity the first two steps are practically one, and in producing the conditions mentioned we usually find that we *have* made the gingival and pulpal walls flat mesio-distally at least and parallel with the horizontal plane of the tooth, the axial wall rising from them at *definite* angles parallel with the vertical axis of the tooth. Those operators who prepare their cavities for metallic fillings in accord with the principles enunciated by Dr. Black will find little difficulty in adapting their cavity preparation to the requirements of the inlay. In fact, some of my specimens were originally prepared for cohesive gold fillings, the only change being the elimination of linguo-gingival and bucco-gingival retention and the straightening of the walls of the step so the wax would *draw*.

In providing retention against stress we must consider the direction and amount of the stress and the form of the occlusal surface of the completed inlay. In bicuspids and molars stress is delivered upon the occlusal surface within a radius of from twelve to twenty centigrades with the vertical axis of the tooth. In accordance with dynamic laws, resistance to such stress should be provided as near the point of delivery of the stress as possible—in these cases it should be in the occlusal third of the cavity.

If the occlusal surface is not involved so that a step is not employed the buccal and lingual walls should join the axial wall at such an angle as to give a dovetail, with its base formed by the axial wall, especially in the occlusal third. If a step is employed the retention may be entirely in the step and should show a dovetail

form as we look down upon the occlusal surface. The *amount* of retention necessary is governed by the *amount* of stress. In a perfect inlay operation the cavity preparation should be such that the inlay will remain firmly seated, *without cementing,* against any stress excepting that necessity to withdraw it in a line parallel with the vertical axis of the tooth.

In the preparation of enamel margins the same care should be exercised and the same laws observed as in cohesive gold fillings. The greater density and strength of the cast filling may, however, permit of greater bevels of the margins of the inlay. The greatest care should be exercised that all lines be *true* and all margins definite and smooth. In the preparation of cavities Dr. Taggart advises the use of small *true* carborundum discs and points as giving a better preparation and being more humane, as they can and *should* be kept wet by continuous stream of water. Each part of the cavity should have a stone shaped especially for it, which should be used nowhere else.

Making the Inlay. In the formation of the wax model there are two methods in vogue—one in which the wax is placed directly in the cavity in the mouth, carved and polished in situ; the other, by taking an impression of the cavity, making a cast and completing the wax model in such cast out of the mouth.

That perfect inlays can be made by either method is proven to the writer by many examples which have come under his observation. In either method *all* depends upon the character of the wax. When working directly in the mouth the wax must be of such composition as to remain hard and not drag at the temperature of the mouth. The one provided by Dr. Taggart is the only one which meets perfectly this and other requisites. When working in models a wax *may* be employed which softens at a lower temperature, still the Taggart wax will be found much more satisfactory in either method. When working in the mouth, after the patient has bitten upon the wax to indicate the occlusion, the proximal surface should be carved so the mass can be removed. It should then be chilled and removed to prove that the cavity is properly prepared and that the wax fits perfectly. Being satisfied on these points it may be returned to the cavity and the model completed. In carving the occlusal surface we should not be satisfied with the surface formed

by closing the teeth, but should carefully reproduce the anatomical markings of the tooth. If we accept the contention of the orthodontists that irregularities and diseases may be caused by *one* filling with a faulty occlusal surface, the making of perfect occlusal surface upon our inlays is of vital importance. With models made of such a tractable material as the Taggart wax these perfect surfaces may be produced with ease and accuracy.

If the model is made in a cast of the tooth the material of which the model is made is not so important as that a perfect reproduction of the cavity be obtained. Amalgam, cement and a new material called "modelite," which seems to give a very clean, perfect cast, are employed. Amalgam, however, seems to be given the preference by many operators. The work of many of our best operators following the model method proves that perfect casts *can* be made of either material.

In investigating the model it is of prime importance that the investment material be very fine, so it will give a smooth surface to the casting; it should neither shrink nor crack under the heat to which it is subjected. Here again Dr. Taggart has provided the best material which has been offered. Given this perfect material, it must be so mixed that all air bubbles are eliminated. The inlay having been securely affixed to the end of the "sprue" wire, is carefully covered with investment before placing the cover and filling the flask. When the investment is set the flask cover and sprue should be removed, the flask placed over a low heat and slowly heated until the wax has entirely disappeared. It is then ready to cast: this operation, because of the perfect construction and automatic action of the machine, is very simple. When the gold is melted so that it begins to boil, the single *quick* depression of the lever accomplishes the act.

When the casting is removed from the flask and washed, it should be immersed in hydrofluoric acid to remove any silicious coating which may have appeared because of the silicious nature of the investment. If each step has been carefully performed the inlay should present so smooth a surface that no grinding is necessary; the polishing may be done in the laboratory.

In cementing, some of the cements especially prepared for setting inlays should be used. The seating of the inlay can best be accom-

plished as Dr. Taggart has suggested, by going rapidly from side to side and from center to circumference with an orange wood stick, tapping with the hand mallet.

In conclusion we cannot refrain from reiterating a statement which has been made that nothing has ever been given to the profession which so improved and simplified the operation of filling teeth; nothing which offered greater possibilities and made simple and easy for the patient operations which have been both tedious and painful.

Let us master the technic of the various operations made possible by this invention, not forgetting to give the honor due to him who has so freely given always of his best to his chosen profession.—*Dental Brief;* pages 27-31.

GOLD INLAYS AS APPLIED TO DENTISTRY.

BY E. M. FERNANDEZ, D. D. S., CHICAGO, ILL.

The question today is, has the gold inlay come to stay permanently in the practice of dentistry, or it is only a fad that will first be used, next abused, and last of all fade away from us as other fads have done heretofore?

We have in our profession today practitioners of good repute who claim to fill the cavities in the human teeth by no other means than inlays made to fit properly prepared cavities accurately, and held in place by the use of cement.

We have, also, practitioners of just as good repute who claim that every cavity should not be filled with an inlay, but that good care and judgment should be used to decide the proper place for an inlay.

I sincerely believe that the use of the gold inlay has come to stay permanently and that the profession at large will welcome its birth in destistry for many years to come.

Gold inlay work properly made and judiciously applied will certainly overcome many difficulties in the human oral cavity. For instance, it may be used to great advantage in cases of mal-occlusion where by carefully studying the conditions and uniting two or more

inlays, as well as building up cusps wherever required, a proper and permanent occlusion may be gained and retained.

In cases where the teeth have become loosened by the ravages of pyorrhea or by mechanical injuries an excellent use can be made of gold inlays. Two or more teeth can be held firmly in place by an appliance made of two or more inlays soldered together and cemented in place. In cases where two teeth have become separated, allowing a space for food to lodge and cause an inflammatory and diseased condition of the tissues, which, as we all so well know, is the source of a great deal of trouble, can be corrected very satisfactorily by the use of two gold inlays, set mesio-distally and united or soldered at the occlusal angle, thereby retaining the two teeth in place, preventing the space from becoming larger, and closing it from any further wedging of food.

Gold inlays are also a great blessing in dentistry when used as supports in some cases of bridge work. By studying out the case carefully a very pretty and useful combination of inlay and bridge work can be made, and prove very satisfactory.

In fact, the field for the useful application of gold inlay work in dentistry is certainly wonderful. I believe it has reached a broad and high standard in our profession and has come to relieve us from much hard work, but it is unfortunate to have to admit that the development of cements has not kept pace with us. We have left it far behind. As I am not a chemist, I am not prepared to give an intelligent description of what the ideal cement for our work should be, but I know that we need it now and hope our chemists will, before long, give us a happy and satisfactory surprise in this particular. —*Dental Review,* pages 30-31.

GOLD INLAYS AS APPLIED TO DENTISTRY.

BY GEO. W. HASKINS, D. D. S., CHICAGO, ILL.

Had I been requested a year ago to speak upon this subject I should have found no difficulty in saying much that might have been taken as harsh criticism of the gold inlay. In no field of dentistry have I worked harder and with less satisfaction than in the making of gold inlays. With simple cavities it was relatively easy to reach

a fair degree of success, but in these better results could be attained with non-cohesive and cohesive foil, and with less expense of time and labor. In those major cases when it would be of the greatest benefit, after much labor, care and time, I had to satisfy myself with "it is the best I can do." Sometimes the forces at work in the mouth were good to me and the filling remained in place, and sometimes they didn't.

There are many steps in the making of inlays with a matrix. A departure from perfection in one of them will be magnified in the final results, and the only way to overcome the defect is to start at the beginning. Now, why use such a method of filling teeth when by the use of non-cohesive and cohesive gold foil one can get better results in less time? I have no use for the matrix made gold inlay. But for Dr. Taggart's cast inlay I have nothing but unqualified appreciation. Such perfection of fitting as it makes possible, limited only by the care and skill of the average operator, leaves me with no choice. It is good dentistry, and, unlike many other departures, it has come to stay. You do not have to pretend the joint is good or be satisfied with a poor one. You can have a good joint if you want it. And this cannot be said of the inlay made with a matrix either in gold or porcelain, except in the hand of the superlatively skillful or persistent.

Were it not for the better appearance which the porcelain inlay presents, I would have almost as little use for it as I would for the gold inlay, but it has this good quality and the additional one of not irritating the pulp, and for these reasons I have used them, and I shall continue to do so, but in the six front teeth only. Even then it hurts my eyes when after a little use I see them with broken edges and stained joints, and it hurts my feelings to reset and replace the lost ones.

With regard to the statement that the porcelain inlay is a better preservative of the tooth than the foil filling, I do not believe it, provided the foil filling was properly inserted in a cavity prepared with the thought of preventing future decay, and, of course, by skillful hands.

There is a great difference in the amount of cutting necessary in the preparation of the cavity for the inlay and the foil filling. This is particularly so in the proximal surfaces of the bicuspids.

After preparing such a cavity for foil and extending it to the gum margin, we find we have not encroached upon the buccal and lingual surfaces to any great extent, but if now we determine to make an inlay, we must cut away sound tooth until all too often we have but a remnant of such surfaces left, and such destruction is not necessary. Old and tried methods have proved their worth through the years that have passed, and though they may perhaps be more difficult, can we as a profession afford to do it some other way merely because it is easier? What would we think of the surgeon or physician who would give such a reason for his choice of method?

In such cavities as I have mentioned, I would prefer to use non-cohesive foil with cohesive foil in the step. There is no question of its value as a filling, and it would require the best fitting inlay to do as much. There would be decidedly less destruction of tooth and less gold showing. Do not overlook the value of non-cohesive foil for filling teeth not in little pellets, but in rolls containing never less than one sheet and sometimes two or three. As a method, it is quick and it is sure. I would not advise its use always to the exclusion of the inlay, but where it is the best method use it, and when the inlay is the best use that, meaning always the cast inlay, and the very best one you can make.

As a profession like our medical brethren, we are prone to run to extremes, and it would perhaps be a good thing to recall a few of our acts of the past. There are not many present who have practiced long enough to have seen a mouth that had been ruined by the Arthur method of separation, yet many a good, conscientious practitioner mutilated mouth after mouth, and did it in good faith, thinking he was doing his patient a kindness.

Before we knew as much of cocaine as we do now, we used it indiscriminately, and in our ignorance took great chances, for often very small possible benefits. Today we use it with the discretion born of experience, and the death rate is decreasing. About that time the journals were full of articles on the use of flour of sulphur, tooth powders were full of it and mouths were full of it. Today you never hear of it. Cataphoresis had its day. Copper amalgam was heralded as the ne plus ultra of filling material, and it took several years for us to learn that it was not quite all its advocates thought it was. It took us some time to discover that we were not using good judgment

when we advised the use of porcelain bridges, except under the most favorable conditions, and an eminent gentleman in the east within the last three or four years was not patient with a man who used gold in the molars and bicuspids. Porcelain was the only thing. Today he is using gold inlays, and so we might continue and fill the entire evening with the history of these things.

When a patient calls upon us for our services, the first thing we have to do is to exercise our judgment in discovering the trouble, and then advising the remedy. This is as far as the physician goes, and if the diagnosis and advice are both wise they in themselves are worthy of a fee, but the dentist and the surgeon both go further than this—they administer the remedy after the diagnosis and advice has been given, but the remedy has no value if the advice was wrong, and often does great harm.

Gold foil, properly handled, has done too good work in the past years to discard it lightly, and it still has a work in the future. Use it in the smaller cavities, use it in the front teeth, use it in the bicuspids in its noncohesive form, when to put in an inlay much needless cutting would be necessary, and use the inlay when it is the best remedy, but do not use it because it is the easiest. It is wonderful the perfect adaptation of surfaces which the cast inlay provides. It is a good thing for the people as well as the profession. But don't forget that your judgment comes first, the making of the filling afterward. Let your judgment be well seasoned before using it.—*Dental Review,* pages 31-34.

GOLD INLAYS AS APPLIED TO DENTISTRY.

BY VICTOR H. FUQUA, D. D. S., CHICAGO, ILL.

There is no subject of more vital importance and interest to the dental profession of today than that of restoring caries of the teeth with gold inlays. We have passed the experimental stage of this process, and it is neither my purpose nor intention to offer any defense of this principle or to give you any new or original ideas, but to point out as briefly as possible some of the advantages the gold inlay possesses over the method which is rapidly growing obsolete of filling teeth with foil and amalgam, and why we should get out of the old ruts and take up this most humanitarian process.

The dentist of today who is not making gold inlays or is even "luke-warm" is falling behind, doing himself an injustice and depriving his patrons of that which they have a right to expect and demand. Namely: permanent operations minus long hours of suffering under the mechanical mallet with mouth propped open, filled with rubber dam, clamps, ligatures, separators and last, but not least, the sandpaper strips for final finishing. Our first duty should be to perform permanent and serviceable operations, our second to accomplish this with as little pain and discomfort as possible, and our third to save ourselves time and labor.

The gold inlay has come to stay because it measures up to these three standards. The first consideration in making an inlay is the cavity preparation, which can and should be done almost entirely with stones mounted on mandrels for both the straight and right angle hand piece; inlay burs being used only for very small cavities and for squaring the seat of the inlay.

The pain in preparing cavities, using properly shaped stones kept wet with a stream of water in the hands of an assistant, can be reduced to a minimum, and you have won the gratitude of your patient from the start. Plenty of water applied to rapidly revolving stone and bur is the best dental obtundent that has eved fallen into my hands, and a personal trial in the mouth of the most skeptical will convince him of the fact just stated. Cavities prepared in this manner have perfectly smooth margins, making easy the withdrawal of matrix, impression or wax model.

Recent developments in the method of making gold inlays has superseded all others. We are no longer confronted with the perplexities of making a perfect matrix, warping in soldering, doubtful occlusion and imperfect contact points. For this last step in the evolution of the gold inlay we are indebted to Dr. Taggart, and I wish to pay my personal tribute to him through this society for this beautiful system which he has originated and perfected, thereby revolutionizing the practice of dentistry.

The question of cementation is the one great point which inlay workers in the past have had to defend, but years of clinical experience in observation of my own and the conscientious work of others has convinced me that the cemented joint instead of being the "weakest link in the chain" is the strongest, provided the inlay has been

seated so as to resist direct and lateral pressure and perfect adaptation to cavity margins obtained. For every failure of a gold inlay there can be but one cause—that of faulty cavity preparation. Just so long as cement is depended upon to retain inlays in saucer-shaped cavities there can be nothing but failure. No conscientious operator will set an inlay he knows is not perfectly adapted to the cavity margins, so I will give no consideration to failure from this standpoint.

On the cover page of the *Dental Cosmos* you will find these four words month after month: "Observe, Compare, Reflect, Record."

I have faithfully obeyed these injunctions as regarding gold inlays, and you will pardon the mention of a case which came into my hands 10 years ago where five large gold inlays had been placed in molars and bicuspids by our own Dr. Ames. These inlays have been doing service 15 years and they stand in perfect condition today as a monument to Dr. Ames' skill as a conscientious pioneer inlay worker, while my foil fillings have failed under the process of mastication. I am grateful to Dr. Ames for the inspiration I have received by observing and reflecting on the success of his labors. It must be remembered that 15 years ago we did not have the good cements we have today or the knowledge of cavity preparation or the methods of getting perfect adaptation to cavity margins, and yet these inlays have stood the test of time, convincing me in the safety of the cemented joint.

For years we have heard the dental profession weep and wail over the teeth that have been sacrificed to the ill-fitting, unclean, unsightly gold shell crown. In the hands of the successful inlay worker of today, molars and bicuspids with large mesial, distal and occlusal cavities are being saved in comfort with pulps intact through the intelligent use of the gold inlay, and good shell crowns are rarely indicated where in the past it has been common practice. Perfectly sound molars and bicuspids that were formerly sacrificed to the gold crown to serve as abutments for bridges need no longer be crowned. A good fitting, well seated, interlocked inlay serves this purpose most admirably.

Large and inaccessible cavities in pulpless molars and bicuspids where foil is impossible and amalgam used as a makeshift can be filled much more satisfactory with inlays in the same length of time, and with a clean conscience a fee bill can be rendered far in excess of that

for an amalgam filling, knowing you have rendered better service to your patient and increased your self respect.

The present system of making gold inlays enables us to vastly increase the amount of a day's labor as compared with what can be done with foil and pluggers; and it has transformed the practice of dentistry from veritable drudgery to that of positive pleasure. Increasing the amount of our daily labor should of necessity increase our incomes and personally this is a matter of no minor importance.

In my enthusiasm I am not unmindful of what has been and is still being accomplished with foil, but consideration must be taken of the vast amount of labor and time it consumes, not to mention the discomfort to the patient. We are constantly reminded by the conservative operator that gold fillings stand up for 25 and 30 years. Yes, but how many? I do not think I am far wrong when I say that five years is the life of gold fillings made by the average dentist. I am not so conservative that I intend to wait 25 years to see if the other fellow's inlays come out. I have been watching some of my own for 10 years and every time I see them it renews my confidence in that cemented joint. Conservative foil workers tell us that foil is indicated in a mesio-occlusal cavity of a molar, but for a disto-occlusal cavity a gold inlay is indicated. It certainly is not logical to my mind why this distinction is made. If an inlay is indicated in a distal cavity, why not in a mesial? In looking over recent dental journals it is surprising to read of the number of methods of lining cavities for gold fillings with cement, bringing the cement to the margins of the cavity and proclaiming its advantage. Many of the writers of these articles are conservative foil workers, doubting the success of the inlay, and yet are making use of the very principle which they condemn in the inlay.

While it may be true that our cements are far from being ideal, it is true that these same cements properly handled are serving their purpose admirably, and the fact that inlays have been doing service for 10 and 15 years is ample proof of this statement. As the ox cart has given way to the automobile as a means of transportation, just so will our old methods give way to the cemented filling.—*Dental Review,* pages 34-37.

REAL REMOLDABLE PORCELAIN, INCLUDING MOLDABLE GOLD, SILEX, CARBORUNDUM, CORUNDUM, CLAYS, ETC.*

BY CHAS. H. LAND, L. D. S.

The title of this paper is in contradistinction to several commercial products which usurp the name, having no adequate foundation in fact to support them. In this instance, I refer especially to certain compositions which are in reality formed of oxide of zinc and a small per cent of vitrous material, combined with phosphoric acid, which, when scientifically nominated, are known as cements. In addition I will include certain compounds of soda, potassium, etc., which are well established as glass, or semi-porcelains. Then we have the real pottery porcelain as distinct from china, stone ware, common pottery, pure clays, etc.

In order to obtain a true definition of vitreous masses, it will be necessary to consider them both and to have a practical knowledge of their chemistry and peculiarities when variously compounded. All vitreous masses, whether they are identified either as pottery, porcelain or glass, their natural origin is found in what is known as the feldspars, kaolin, and silex. For example, the formula of fine French china and porcelain may be kaolin 48 parts, feldspar 48 parts and chalk 4. In dental porcelains we leave out the chalk, increase the quantity of feldspar and silex, and reduce the kaolin.

I will now describe a series that I have arranged in groups. Combined they represent real moldable porcelains of glass, clay, sand, china, corundum or emery, carborundum, gold, silver, amalgam, and various other metals.

What I wish to convey, is that, all the above enumerated substances are put into a plastic form, so, that with your fingers alone they can be manipulated into an unlimited number of forms, we can also impress them into molds of various kinds, and then when they are submitted to higher degrees of temperature they become hardened into durable and exceedingly valuable articles of utility, not only for dental purposes, but they cover a wonderful range of opportunities in various arts and manufactures.

*Read before the Michigan State Dental Association, June 5th, 1907.

I have made a series of specimens that I will undertake to describe in detail: Group A shows specimens of Brewster's body, shade 2 and 4; these show almost 40 per cent shrinkage, and 30 per cent less of color as compared with a high grade block body, both taken from the same mold.

Group B, Figure 14 of this group shows no loss of color, when in a state of partial vitrefaction. Here I must explain what I mean by partial vitrefaction or fusion: It is when a substance is so highly fused that it will flow into a homeogenous mass, like metals and their alloys, and will readily flow or mix thoroughly together. Silicate of soda or glass will do this when highly heated, and then become transparent. On the other hand, if the same silicate of soda was only partially fused or vitrified, it would be either opaque or semi-translucent. If opaque, it might be recognized as a semi-porcelain, or an incomplete glass, and would not be entitled to the name of dental porcelain. The latter should consist of a compound mixture of particles, one of which is difficult of vitrefaction at very high temperatures, and the other particle that at a slightly lower temperature The lower fusion mass merely acts as a binder; for example, take it in the case of carborundum, as shown in several specimens exhibited. In this instance, 25 per cent of block body is added to finely ground carborundum. These when mixed together and fired, form a mass hard enough to grind porcelain.

Figure 42 is common red or brick clay. Sand and clay keep very sharp outlines throughout the fire, and show very little shrinkage and is hard enough to grind glass if converted into a suitable wheel. The red clay when fired keeps very sharp outlines, and shrinks but little, but can be cut and carved with an ordinary pocket knife.

Group B represents a porcelain mold from which the casts of molar teeth were taken, one of them including a mold from the S. S. White block body, and three others are made from the high firing, consolidated tooth body. All these keep sharp outlines through the fire, take a most perfect glaze, hold their colors, and are the most translucent of any on the market today. Another illustration shows the same tooth composed of carborundum submitted to over 3,000 degrees of temperature. This is substantially of the same combinations as our carborundum wheels, and is as hard. Notice that the shrinkage is so slight as to be imperceptible.

A number of molded crowns are here shown which were molded in plaster of Paris or brass molds. They are high fired incisor tooth crowns, similar to the Davis, Whiteside, the Logan crown and common pivot teeth. In fact, with moldable porcelains the day is fast approaching when each dentist from common plaster molds can with the utmost facility turn out any form of manufactured teeth now on the market. I refer to the class that belong to the individual teeth, meaning not the rubber teeth or pin teeth for bridges and gold work, but the pivot class of teeth. I claim that we shall be able to do it better and cheaper, and not be inveigled into the scheme of paying $52.00 per pound for porcelain bodies that it does not cost $1.00 per pound to make, and which should sell at a fair profit at $2.00 per pound; nor will we have to pay 35 cents for a tooth with a hole in the end, when we can duplicate it dead easy for one cent, and turn out a tooth every five minutes ready to adjust to the mouth.

Another illustration represents a silver mold from which cast forms were taken made from ground high grade French porcelain or china ware. In one mold the French pottery porcelain shrinks about one-sixteenth, while the shrinkage of a cast made of the same pottery to which carborundum to the extent of one-half its bulk had been added, shows no perceptible shrinkage.

These experiments are made to show that by the addition of gum chicle to porcelains of all grades they can be made moldable at pleasure, or can be cast into definite forms and baked to vitrification without change of form or loss of detail, providing a true or high fusing porcelain be used. The higher the fusing point the sharper the detail, and better the form and the less shrinkage. The addition of infusible materials like corundum, emery and carborundum seem to materially lessen the shrinkage.—*Dental Register,* pages 595-598, '07.

PORCELAIN.

The success of a porcelain filling is dependent more upon a correct occlusion and the care exercised in fusing, than upon any other factors in its construction.—*Dr. F. T. Van Woert, Cosmico.*

CEMENT LINING IN CAVITIES IN WHICH ALLOY FILLINGS ARE TO BE MADE. THOUGHTS SUGGESTED BY EXPERIENCE GAINED FROM INLAYS.*

BY W. W. VANCE, D. D. S., OTTUMWA, IOWA.

In presenting this subject for your consideration I do not claim anything new or original in the matter, but aim to direct attention to its merits and discuss the various methods used in accomplishing the purpose, together with arguments for its use.

I will not undertake any discussion of the merits of alloy fillings or comparisons with other filling materials, but, assuming that there are many cases in which alloy must be used, then it is worth while that the methods of manipulating this material should be studied.

Since the advent of the inlay we have learned the value of the perfect sealing of any slight space between filling and cavity wall. It is not necessary for me to take up any time in reciting the experience gained by cementing fillings which had become loosened from any cause other than recurrent decay, and noting the splendid preservative quality of such filling afterward.

We all know from observation of fillings that if they leak or have faulty margins, they are a delusion and a snare; and that where cavity preparation has been properly made and a perfectly tight filling inserted good results have followed. It is this comparatively tight joint between cavity wall and filling material where alloy, if non-shrinking, has been used that has made the alloy filling the success it has been in the preservation of teeth. However, we see failures with amalgam that have caused us to diligently seek for something in addition to careful cavity preparation, that would as far as possible eliminate them or reduce their number.

You may all have noticed occasionally, in the removal of alloy fillings, that the alloy seemed to be fairly glued to the cavity wall and there was no decay under the filling at that point, while on some other portion of the wall decay had penetrated under the filling; that portion of the tooth remaining sound did not have the appearance of being better material than that part of the tooth where there

*Read before the Iowa State Dental Society, 1907.

was failure. This argues to my mind that from some cause there was leakage, perhaps from shrinkage and that the alloy pulled away from one wall of the cavity but remained tight and by oxidation seemed to adhere to the other. This, too, in the face of the fact that there was considerable breaking away of the margin, possibly improperly prepared.

Taking it for granted that the cavity has been properly prepared for filling, that is, all of the decay removed, seats squared and margins carried into clean areas, the next most important thing is a perfectly tight stopping and one that will remain so.

The combination of cement with the inlay, is the principle I wish to borrow from that operation and combine with alloy in order to effect a tight stopping. The cement in inlay work has two distinct and equally important offices; one, the sealing of the cavity, or more properly speaking, the obliteration of any space between inlay and cavity wall, the other the retention of the inlay.

It must be admitted that the sealing of the cavity is important and if it is a good thing to seal the cavity in inlay work, the query arises why not use cement to thoroughly seal the cavity when alloy is used? I believed it to be a good thing and proceeded to use it in a great many cases and with very gratifying results. It accomplishes three desirable results, viz.: Perfect sealing of the cavity; practical elimination of thermal shock in vital teeth, and assists retention of the filling. The last, however, I do not consider worthy of consideration *per se*. The retention should be accomplished by proper cavity preparation, but if there is additional adhesion from the cement it is desirable, but should not be relied upon solely.

I think the cement should not form a particularly thick layer under the filling unless there is need of extra protection from thermal shock; in such cases I see no objection to a rather thick layer over the nearly exposed pulp. I sometimes use in such cases some of the regular pulp capping materials before inserting the cement. In no case should the cement come to the margin of the cavity with any considerable thickness; but rather squeezed or burnished out so that when the filling is completed there will be no line of cement showing at the margin. This I consider essential whichever method of lining the cavity is used.

The next thing to be considered is the method of inserting the

cement and making the filling. There are several methods of accomplishing this which may be worthy of description.

The first one I will describe almost necessitates the use of the rubber dam, at any rate the cavity must be kept dry until the lining has set sufficiently hard to suffer no harm from moisture. This consists in smearing the cavity wall with rather thinly mixed cement and a lining of gold foil burnished into the cavity rubbing toward the margins, thereby expelling all but a thin layer of cement, leaving the foil in the cavity like the matrix for an inlay. After the cement has hardened sufficiently to burnish the foil to the margins the filling of alloy is made in the usual way. You will see this gives us practically a gold matrix cemented to the cavity walls; the mercury of the amalgam effects a perfect union of alloy and gold lining and in this way we get practically a filling cemented to the cavity walls. Margins can be carefully burnished by this method and no cement will show at the margins after the filling is finished.

Another method which I have heard commended very highly is also applicable only under conditions where moisture can be excluded from the cavity until the filling is completed; this consists in making a mixture of the amalgam and cement rather stiffly mixed, smearing the bottom of cavity with thin cement and the mixture of alloy and cement inserted as an ordinary alloy filling, but not quite fill the cavity with the mixture and then complete the filling with alloy; this gives a surface free of cement and I think a very good filling will result, although this is not my favorite.

A third method consists of smearing the cavity walls with cement mixed to about the consistency used for cementing a crown, covering the bottom of the cavity and having the alloy mixed and ready to insert; a good sized piece of alloy should be carried to the cavity and with as large sized ball burnisher as will enter the cavity proceed to crush this piece of alloy and at the same time burnish it over the entire cavity wall, burnishing toward the margins in all directions and force out as much of the cement as you think will be necessary to leave a thin layer of cement over the entire cavity; remove the surplus cement at the margins and adjust matrix if needed and proceed with the filling.

This method presents the points of advantage, that the cavity does not have to be kept dry so long but that it can be accomplished

without the rubber dam in most cases, although no objection to its use can be made so far as the filling is concerned. The cavity is provided with a thin layer of cement and but a very small portion of the alloy is contaminated with the admixture of cement. A slight admixture in the bottom layer, however, is almost unavoidable, but not of sufficient amount of materially impair the strength of the mass after the filling is completed. The margins should have the same treatment in all cases and in fact should not differ from a filling made in the ordinary way.

A rather quick setting cement should be used, and one that has the character of being a nonirritant in so far as possible, such cements as are used in inlay work being preferable.

Large cavities with frail walls are particularly indicated in cases in which cement linings should be used, but good results are to be expected in all classes of cases where alloy fillings are made, but like all other good things it admits of abuse and should not be resorted to for the purpose of bolstering slip-shod work.

I trust the discussions will bring out much valuable information and be the means of helping to make better alloy fillings.—*Tri-State Record.*

AN OFFENSIVE DESIGNATION.

BY T. W. ARNOLD, D. D. S., BUTLER, MO.

I read a short article in the September number of *The Western Dental Journal,* for last year, headed as above, in which Dr. Jno. H. Simon, Health Commissioner of St. Louis, is quoted as issuing an order of elimination against the use of the word 'Doc." in all divisions of the Health Department. The article was copied from the *Dental Brief* by *The Western Dental Journal.* I read the article with much interest and tried to wax indignant over the appellation of "Doc." as applied to practitioners of our art and profession, as had the esthetic health commissioner, but just at that moment a patient came in and called me "Doc." and handed me a check for $40. That check was as soothing to my lacerated feelings as cold cream to a burnt hand. The man was a friend, a gentleman, and an educated

*Read before the Missouri State Dental Association.

man of esthetic tastes and habits—but he was a busy man, a man of financial ability and a power in the community, one whose monthly pay-roll helped many a laboring man to fight the wolf a little longer. Would it have been policy, would it have been courtesy—"the man was in my office, the mission a friendly one," would it have been Christian, would it have been American, would it have been democratic and in keeping with our idea of equality and republicanism and lastly, would it have been business—to have taken the man to task for calling me "Doc." when he recognized no offense in it, or at least intended none, gave me his patronage and his friendship? I recognized no deterioration in my ability, and my moral or mental breadth, felt no evaporation or escape of pride or importance, felt no loss of influence in the community; I had no inflated valuation to puncture, but realizing the dignity and worth of my profession, allowed my actions to uphold their position in the community. No matter if we be a dozen times Doctor and have not honor and dignity and some degree of ability and sense, the term Doctor is a reproach to the profession, and if we have honor, dignity, ability and sense, all the gates of evil may travail against us, but we have builded upon a rock and our foundation is secure.

We had a little dentist and a little physician in our community once—not only were they small in dimensions, but their souls were even smaller than their tenement of clay, but their chest measure was enormous, expansion of self-importance almost floated them—doubtless did something toward floating their bills, every time you heard them called Doctor, you wanted to quit your profession and go to mending umbrellas. Neither liked the title "Doc." The physician especially abhorred it, and yet he couldn't tell appendicitis from gastritis. And yet they were entitled to the dictinction of Doctor, by right of diploma, and, I suppose, by right of conquest. So that we see there's nothing in a name, "a rose by any other name would smell as sweet," the honor lies in the man and not in the title."

"Honor and shame from no condition rise,
Act well your part, there all the honor lies."

I am afraid we are too anxious and too much given to titular honors, too willing to accept and confer degrees, too many colonels, too many majors, too many professors, too many doctors. When introduced to a doctor now it is almost permissible to ask, "Horse

or Hoodoo?" I would decry this American habit of conferring titles. If we were more careful, if newspapers would desist from calling every subscriber or every man of prominence, Honorable or Colonel, if colleges were more careful in selecting their timber for these degrees, looked after their matriculant closer, investigated his social, moral and mental aptitude for the degree of Doctor, greater respect would attach to the degree he bore and the diploma he carried. An applicant's moral rectitude should be his first requirement, mental aptitude second, social and financial standing a lagging third, for, if his morals be good and his mind clear, the third condition or requirement will have been fulfilled *in toto*. And when that kind of a matriculant graduates, people will be glad to do him honor; they may perchance not call him doctor on all occasions, for habit and intimacy license many an error. You may be called Mister, occasionally, but don't rebel, for if you are a gentleman you are entitled to it, and if you are not a gentleman, calling you honored names won't make you one. So give us the very best you have, "To thine own self be true, and it will follow as the night the day, thou canst not then be false to any man," and honors will be thine and old age will aureole thy head with a halo of glory, and perquisites in plenty will keep all thy wants. I would have no man misunderstand me or think one moment that I depreciate the degree of D.D.S., of Doctor or Dentist, for there can be no more worthy or honorable calling—no one alleviates a more universal degree of suffering than does the dentist, few have greater opportunity for good than he has. Society is always open to us if we demean ourselves at all properly, our habits of study and reading during a college course fit and prepare us for farther and deeper research and we find it pleasant and profitable to take up other studies, thus broadening our point of view and giving us greater power in our particular avocation.

We are much like water in some respects, we seek our own level. If we are a so-called hale fellow, well met and one of the boys, we may expect to be called "Doc." If we are dignified and not given to joking or visiting on the streets, see the serious side of all things, we will usually be called Doctor. "As you mete it to your fellow-man, so shall it be measured unto you." If your friends are all Bill, or Dick, or Tom to you—you will be "Doc." to them. I for one would rather be "Doc." to a good friend than Doctor to a bad enemy.

One's location has more or less to do with what we may be called, in the cities, perhaps, where a shifting population and a larger field for operation prevents those familiarities that exist in the country, one may be called Doctor, but in the country practices where you learn the names of all the horses and dogs on the place, and have to kiss the baby like any ordinary politician, one is likely to be called "Doc." and be invited to eat yellow-legged chicken, country butter, country honey and country flies, with chiggers on the side; but if a man be honest and true, whether he be called Doctor or "Doc." he is a man for all that.

I am in no wise a debater, hence, wll not try to refute or answer *in toto* the argument of the gentlemen differing from me. But since preparing this paper, a few other thoughts have come to me. Primarily, then, I don't believe that the dignity of our profession needs upholding or defending, but rather the individuals thereof, those units, which, when assembled, constitute the dental body, and the obligation is not a new one or novel one, but is imposed upon every member of society. We each owe an obligation to "quit ourselves like men," and a man, a gentleman, is always ethical. No matter what his avocation or profession in life may be; a man may be educated to that extent that he appears like the real thing, but put him in the crucible and test him, and you find him a cheap imitation, he don't make good at the critical moment, and our profession, just as society, contains such men. They are all right as long as things work smoothly and people delight to do them honor, but let the lean days come and they cast about for a shorter cut and a quicker way to the ducats, and D.D.S. then becomes an advertising feature, and brings reproach on the profession.

A Doctor of Divinity is never called "Doc." I think of two reasons for this: First, we must admit their dignified bearing; second, the cut of the cloth prescribes his calling, as a priest or a rector. His coat and his collar indicate his walk in life.

However, I contend that "Doc." is not intended or offered as a term of disrespect, but is due to the American habit of abbreviating. The automobile is the auto; the chrysanthemum show is the mum show; everything is abbreviated, even the ladies' dresses—as the newly-elected congressman out West found out. He and his wife were invited to a swell social function, and their position in

the 400 was so new that the good wife refused to go—claiming she had no gowns suitable for the occasion; but insisted on her husband going, as she wanted some one to go who could come home and tell her about it. He demurred, but finally consented. That night when he returned home from the reception, his wife met him at the door, all eagerness to know about it. What kind of a time had he had; how were the rooms decorated; who were there; was Mrs. So and So, with her $1,500 gown there. He made the usual answers. She wanted to know how the refreshments were served; seated at the table or how. He told her at the table, and she again wanted to know how the ladies were dressed. He told her he looked around the table and everything above the table was naked, and he was too modest to look under the table.

I believe that in the end modesty pays; maybe not in dollars and cents, but in the sense of the servant to whom the Lord said, "Well done, thou good and faithful servant, thou hast been faithful over a few things, I will make thee ruler over many." "Though I speak with the tongues of men and of angels and have not charity, I am become as sounding brass, or a tinkling cymbal," and "though I have the gift of prophesy and understand all the mysteries, and all knowledge and have not charity, I am nothing; charity suffereth long and is kind, charity envieth not, charity vaunteth not itself, is not puffed up; does not behave itself unseemly, seeketh not her own, etc." I believe this charity could well be applied to those who call us "Doc." whether it be through ignorance, carelessness or maliciousness, more especially would there be need of charity in the latter case. Charity is not puffed up, vaunteth not itself, "Faith, Hope and Charity, and the greatest of these is Charity." It seems to me that this Scripture might apply directly to the subject under discussion.

Again I want to say I believe in the dignity of our profession, but I believe it can be sustained better by a dignified and scholarly bearing than by rebuke and stilted manners.—*Dental Era.*

PARTIAL DENTURES.

BY E. J. PERRY, D.D.S., CHICAGO.

Probably no department of our work falls so far short of complete satisfaction as the supplying of teeth in partial sets. These

cases are innumerable in variety; in fact, almost every case is one by itself, and unlike any other preceding one. It is therefore that no set rule can be laid down, for their manufacture. No system can ever be universal in its application. Certain principles, however, must always be observed, because certain conditions are always present. Fixed bridges have but a small range of application for the following reasons: The biting stress upon the supplied teeth must be received by the abutments and piers, and if any number of teeth be supplied above two, the abutments will sooner or later give way, especially if opposed by natural teeth. This not taking into account the unsanitary features of a fixed bridge, which must ever remain an unanswered objection. While the above statements are absolutely true, bridgework under its indication is an important factor in prosthesis, and he who cuts it all out is denying to his patients an invaluable service. By far the greater number of cases calling for the restoration of lost teeth, the remaining teeth or roots are not so located or are not strong enough to be available for a fixed bridge. In all of these cases the stress of mastication of the opposing teeth must be received by the alveolar ridge left by the lost teeth and the remaining teeth and roots can only serve as a means of holding the piece in position. The difficulties in these cases are rendered greater because the alveolar ridges are cushion-like and yield under stress, while the teeth serving as stays do not. Therefore a judicious division of the stress or pressure of mastication should be made between the alveolar ridge and the attachment roots or teeth. As no system can ever be absolutely universal in its application, one must make an exhaustive study of each case presented, and use the form of attachment or stay which seems to fill the largest number of requirements in the case in hand. The most valuable service you can render a patient is in determining the right thing to do, not alone in doing the right thing, but in doing the right thing right. A surgeon may be the most skillful in removing the appendix vermiformis; he may make a beautiful operation, and be entirely successful; yet if the appendix did not need removing, he is a failure. He did the thing right, but he failed because he did not do the right thing. Parenthetically, I fancy this is often the case.

Now in all these cases of partial dentures we must be careful not only to do the thing right, but to do the right thing. This brings us to a consideration of a few individual cases, and as the different cases

are shown on the screen, I wish to take up the indications for the use of the various methods.

I wish here to make a statement to the point that the operator and not the prosthetic man is the one qualified to do this work, or, stated conversely, the prosthetic man who is an operator is the man most nearly fitted to do this work. Often I have seen a mouth carrying beautiful operative work, and some lost teeth supplied with a cheap adhesion plate of rubber. The operator quit with the natural teeth. Now, he comes out into the larger field, and one of equal importance, and uses his skill and operative methods in supplying or restoring broken or part sets.

It matters but little in what classification the work may be placed, prosthetic or operative, or whether prosthesis has retrograded in the last thirty years. The fact in the matter is, the operator has widened his field of work, and extended it to what may be called for want of a better name operative prosthetics, and the purely prosthetic man and the purely operative dentist are both ineffective in the fullest sense in general dental practice. All these part set schemes must be conceived in the operating room, though they may be born in the laboratory. The operative prosthetist, it seems to me, is the coming man. He makes the gold inlay; he makes the gold and porcelain crown; he makes the gold and porcelain bridge, he makes the regulation apparatus, and later he will, if he has not done so in some measure already, lift prosthesis proper up out of the sloughs, and plant it upon the terra firma of artistic and mechanical excellence. The modern operator, therefore, must be a dental mechanic as well as a dental physician, an artisan as well as an artist. He must have both executive and creative skill. It is not possible or even profitable to draw comparisons between prosthesis thirty years ago and now. These past thirty years the whole face of our profession has changed. Thirty years ago not more than half a dozen men in the United States made or could make a continuous gum set. Now, hundreds of our best men do this work. Electric furnace is the answer. Men now graduating in our best schools can show carving, gold fillings and inlays that would bring a Webb or an Atkinson into amazement. Evolution! Growth!

Our profession has only kept pace with the evolution of our times. With an educated public come higher demands; with the

higher demand comes the higher profit, and with the profit comes the development; for say what you will, in the broadest sense the almighty dollar blazes the way, after all. If it were highly profitable to make dentures on vulcanite, the best men with the highest skill would make them, and it is gratifying that an educated public is demanding a higher art in this class of work, and our profession is rising to the public need. The public itself forces us to higher the plane. Our civilization demands this or that, and gets is. I therefore say that I believe the percentage of higher art in prosthesis is increasing at a tremendous pace.—*Review.*

A COMPARISON OF GOLD INLAY METHODS.

BY DR. JOHN EGBERT NYMAN, CHICAGO, ILL.

The establishment of any new process has always been followed by a multiplicity of methods to attain practically the same result.

This has occurred so often in the history of our profession that it is to be expected that the future in this respect will be but a repetition of the past. We have witnessed it in everything from amalgams to root canal fillings. The establishment of cohesive gold fillings was followed by the development of half a dozen preparations of gold and twice as many methods of filling cavities with them. The establishment of porcelain inlays was followed by a dozen preparations of porcelain and equally as many processes. So we might go on with example after example if it were necessary.

What has been true of other processes has come to pass in regard to gold inlays. There are now about half a dozen methods in practice, and widely advocated, ranging from the simplest—that of merely flushing a matrix full of solder, to that of the comparatively complicated reinforced sectional or hollow inlay.

Many methods to attain the same desired result. How has this come to be? Through individual ingenuity struggling with the difficulties of individual cases, and, to that which is innate in nearly all of us, the desire to be original.

Many considerationns influence the formulation of a method: First, accuracy and permanency of result; second, comfort of patient and operator; third, ease of manipulation; fourth, economy of time.

It is an axiom that one is not justified in using a complicated method, requiring considerable time, if there be a simpler, quicker method which obtains an equally good result.

If one is guided, first of all, and most of all, by the first two considerations, then any improvements that he can make in economy of time and ease of manipulation are most laudable, but he should be severely criticized for seeking ease and rapidity of construction at the sacrifice of accuracy and permanency and the comfort of the patient. And I am sorry to say that some few methods I have observed have no other claim to general adoption save that they are an easy and rapid means to obtain a result which is simply pseudo-successful and little less than an imposition upon the patient.

But some one may say, of all the many methods some ONE must be the best and should be adopted as the universal and accepted method. This would be an incontrovertible argument if all teeth were similar in shape and position, and if all cavities were identical in character and situation.

Do you use the same preparation of gold and the same manipulation? In other words, the same method—in every gold filling you insert? Of course not—no more should you expect to employ one method in all cases calling for a gold inlay; and yet continually we hear the question asked, "What method do you use for gold inlays?"

There is no "only way" in the insertion of gold inlays any more than there is in other operations we are called upon to perform.

We differ largely as to gold inlay methods because we are not entirely agreed as to the exact field for gold inlays in contradistinction to that of gold fillings; indeed a line of demorcation can hardly be drawn that will satisfy the individual judgment of all operators. Some are so imbued with the efficacy of gold inlays that they concede but a very limited field to gold fillings—others, however, still look askance at "that thin line of cement," and will not employ inlays save where there is such extensive loss of tooth structure that it is impossible to obtain anchorage for a gold filling. Time alone will bring a rational compromise of these extreme views.

I know of no process that has been introduced that is more advantageous to both patient and operator than that of the gold inlay; it has mitigated the hours of toil and suffering for both; it has replaced the uncertain, unsightly extensive amalgam filling with some-

thing more sightly and certain; it has reduced the necessity of crowns, with their accompaniment of pulp and tooth destruction, and has provided for a simpler, more conservative, more considerate anchorage for small bridges than has hitherto been available.

Briefly I will describe the various methods of gold inlays and in similar manner the various classes of cavities in which they may be used, subsequently stating the limitations of each method and the specific class of cavity for which they are best suited; incidentally some variations of certain methods will be remarked.

Inlays may be broadly divided into solid and hollow (or sectional) inlays.

SOLID INLAYS.

Method A. A gold matrix, invested and filled with 22 K. solder, or a platinum matrix and pure gold melted into it. Of these the gold matrix and solder are preferably advised, as pure gold has such a strong tendency to "ball up" when melted that it is more apt to result in a warped matrix.

Method B. A gold or platinum matrix; loosely fill this with some of the fibrous golds to an approximate contour and occlusion, allowing the patient to bite into it, and then soak this full of solder. This method is advised in preference to A.

Method C. Gold or platinum matrix, additional approximal contour matrix of this gold or platinum, invested—filled with solder from occlusal surface opening.

This approximal contour matrix is obtained by filling the matrix with hard wax, allowing the patient to bite into it; then the wax is chilled; matrix removed, the wax is carved to proper approximal contour, and over this approximal surface is burnished a 1-1000th platinum, afterward cut to margin of matrix, then replaced on the contoured wax surface; a hot instrument is run over the margin, which softens the wax to stickiness and fixes the contour matrix in place while it is invested; after this is done and the wax is removed, fibrous gold is loosely packed in and the inlay is filled with solder; of course, it may be filled with solder without first packing in the fibrous gold, but I prefer the first method, as there is less solder in the case, less warpage and a richer color results.

Method G. Gold or platinum matrix, occlusal piece of gold—invested—filled with solder from approximal surface opening.

This cusp piece may be obtained by similar procedure to that described for the approximal contour piece, or it may be swaged in counterdie obtained from model of carved cusp. This method does not commend itself to the writer as much as does method C, for he regards the approximal contour and contact as of more importance than the occlusion, and owing to the fact that solder—en masse—almost always contains holes, minute or plainly evident, it is better that this porous surface should be on the occlusal than the approximal surface. These pits become veritable fermentation pots; they can do no harm upon the occlusal surface, but upon the approximal they are a serious menace to the approximal surface of the adjacent tooth if it be intact; and it is simply saddening to note how often they are to be found at or near the contact point.

Method E. Metal model of cavity—undercut at proper points for retention, filled with cohesive gold—condensed by mallet, built to estimated contour and occlusion, then removed from model and cemented in cavity.

This is a method the writer attempted some seven years ago, but abandoned because of the fact that he was so seldom able to obtain an accurate impression or to obtain a model the margins of which would not either batter down or chip.

Recently, however, it came to my knowledge that Dr. M. L. Rhein, of New York City, was constructing inlays by this method and was obtaining splendid results in practical cases. This report led me to try the method again, and in certain cases I did obtain splendid results, as we now have methods and materials for impressions and models that are far superior to what we had years ago.

The limitation of this method is reached when by environmental difficulties we are unable to secure perfect impressions, a condition that is frequently found in actual practice and which permits us to obtain but an approximate model, the matrix from which, however, can be fitted to the cavity in the tooth accurately and speedily by methods well known to everyone.

A hollow inlay may be obtained by this method by drilling a large deep hole in the model, filling this with cement and allowing it to protrude from the cavity wall in a spheroidal mass; after this has been set thoroughly the gold may be packed and condensed. When this inlay filling is completed, the amalgam may be removed by boil-

ing in nitric acid, and the cement core dissolved by immersing for a time in ammonia.

One advantage of this method is that one may add to the contour at any point after trying it in the cavity by simply freshening the surface with a coarse sandpaper disk and condensing more gold upon it. This method should never be used for bridge anchorages, as pure gold is too ductile.

HOLLOW OR SECTIONAL INLAYS.

Method A. Matrix with center cut out—invested, allowing investment to protrude into matrix in small spheroidal mass; loosely pack with fibrous gold to approximate contour and occlusion, and flow solder into the mass. After removal from investment a countersunk cavity in the center of the inlays is found. The objection to this method is the one before mentioned, that of the oft occurring pitted solder approximal surface.

Method B. Matrix with center cut out, model of modeling compound carved to accurate approximal contour and occlusion, swaged cusp piece identical to carved model, soldered together—reinforced through opening in matrix with lower grade solder. There are two methods of obtaining this cusp piece, one by taking a plaster impression of the carved modeling compound, obtaining a molding model from this—placing a rubber ring about it—pouring a fusible metal contour die—into this the gold cusp piece is swaged with a buck shot; this gives a cusp piece that is identical in size with the carved modeling compound cusp—if the restoration is very extensive, such as involving both approximal sides and the occlusal, or one approximal and a portion of buccal and lingual walls, then the seamless crown method must be used to obtain the cusp piece.

The construction of the cusp piece may be simplified by first filling the occlusal dovetail step with fibrous gold and soaking 22 K. solder into it, making a solid section of it.

The second method is by swaging directly over the carved cusp piece with the matrix upon the metal or cement model. The carved cusp must be made of cement or hard modeling compound cut away at all points and over all surfaces the thickness of the metal to be used.

The criticism of this second method is that one must have first an absolutely perfect impression and model, a thing which, as has

already been stated, is frequently exceedingly difficult—yes, practically impossible to obtain. Moreover, this swaging method does not allow of the swaging of a reinforcing cusp piece which often should be used.

The advantage of this method of gold inlays is that the occlusion and contour may be verified in the mouth just before completion and if slightly incorrect may be automatically corrected by simply having the patient bite on it.

The results of this method are admitted to be ideal by all who have witnessed it, and in many cases better results are obtained than by any other methods.

The only criticism that has been directed against it is that there are so many steps to it and that it takes so much time; this last criticism, in cases in which the method is specially indicated, is simply a preconceived notion which is not borne out by actual experience.

I have, however, scant patience with any such criticism, for however much more time it may consume than some other inlay method, it is a vast improvement in time, suffering and fatigue over any method of gold filling for the same case.

CHOICE OF METHODS.

Having a general classification of methods we come to a consideration of cavities and choice of methods.

SIMPLE CAVITIES.

Class 1. Extensive occlusal surface cavities—if the occlusal surface be comparatively flat with low cusps and shallow sulci—then the simplest method of the solid gold inlays—viz.: Method A, matrix filled with solder, is quite as effective as any other. If, however, the cusps are high, the sulci deep and there is marked overbite, then Method B of Solid Inlays is advised—viz.: A matrix loosely packed with fibrous gold—having the patient bite upon it to obtain approximate occlusion before flowing solder into it. In the preparation of these cavities a definite angle between floor and side walls should be obtained.

Class 2. Extensive buccal cavities in lower molars with marked overbite. In these, Model A of Hollow Inlays is advised—a matrix with center cut out—invested, allowing the investment to protrude in a spheroidal mass about half-way to the ultimate surface of the inlay—fibrous gold loosely packed around and over the protruding

investment to an approximate contour and then solder flowed into it. When the investment is removed an undercut cavity is found in the inlay which gives mechanical attachment between the cement and inlays in addition to the natural adhesion of gold and cement, and by reason of a thicker layer of cement, thermal shock is eliminated—a point to be considered, as these cavities are in a section of the tooth that is particularly sensitive.

Class 3. Extensive lingual cavities in upper incisors—in these Class A of Solid Inlays is most effective; sometimes it is necessary to insert two or three very short posts to secure retention, care being observed, of course, not to endanger the pulp in drilling holes for them.

COMPOUND CAVITIES.

Class 1. Cavities which do not extend to the axial angles in bicuspids and molars of but little contour and slight overbite. In these, Methods A or B (preferably the latter) of Solid Inlays may be used—as merely filling the matrix with solder flush with the overlap surfaces of the matrix results in approximate contour and occlusion.

Class 2. Cavities involving the occlusal surface which extend to or slightly beyond the axial angles in biscuspids and molars which have considerable contour and overbite—the preparation of which involves the cutting of occlusal dovetail and step.

In these, Methods B, C, D and E of Solid Inlays or Method B of Hollow Inlays may be used.

If Method B of Solid Inlays be used—matrix loosely packed with gold fiber afterward filled with solder, an operating matrix must be adjusted while the gold fiber is being packed; sometimes the extension of the cavity rootwise or other circumstances renders this so difficult as to be very uncertain if not quite impossible, and the Method C or E of Solid Inlays is advised if pronounced approximal contour is called for; if but the usual approximal is obtained, but there is an abnormal occlusion then Method D of Solid Inlays may be used; if, however, there is both pronounced approximal contour and abnormal occlusion to be obtained—a combination which often occurs—then Method B of Hollow Inlays is the one best adapted.

Class 3. Cavities in bicuspids involving the entire approximal well, but not the sulci beyond the transverse ridge.

In these cases the cutting of the transverse ridge not only is a painful ordeal for the patient, but endangers the lingual wall, especially if the case be of a lower bicuspid, and Methods A and B of Hollow Inlays are advised, as they provide ample attachment if the side walls of the cavity be slightly grooved before the inlay is set, thereby obviating the necessity of the occlusal step and the severing of the transverse ridge.

Class 4. Cavities involving entire lingual surface of incisors together with one or two approximal cavities. In these, Method B of Solid Inlays is advised, modified as follows: An additional lingual piece is made and sweated onto the inlay to reinforce it before loosely packing fibrous gold into the approximal cavities.

Class 5. Cavities in biscuspids and molars (usually the latter) which involve an entire approximal wall with a portion of one or of both side walls.

In these, Method B of Hollow Inlays is especially advised, as in addition to the immense amount of contour to be restored there is usually an abnormal occlusion to be accommodated.

Class 6. Cavities in bicuspids and molars involving both approximal sides and extending across the occlusal surface.

In these, Methods C, D, E of Solid Inlays may be used, but more especially advised is Method B of Hollow Inlays modified by having both matrix and cusp piece reinforced by additional matrix and cusp of 30 gauge 22 K. gold swaged and sweated to original matrix and cusp piece with 22 K. solder.

The cusp piece in these cases must be formed by methods used for swaging seamless crowns.

This method is particularly suggested because there is very littl solder in it, while in the other methods there is a great mass of solder, that always warps the matrix to a degree.

CAVITIES FOR BRIDGE ANCHORAGES.

Sometimes in the insertion of one or two-tooth bridges in the upper incisors the adjacent teeth have Class 4, Compound Cavities, in them, in which case inlays of the modified Method B of Solid Inlays should be used.

In cases which contemplate the insertion of bridges between bicuspids and molars with inlays as abutments the entire approxtimal wall must be cut away and adequate occlusal dovetail step ob-

tained, and the gingival and occlusal floors beveled toward the center of the tooth; both of these details are absolutely essential. In these is pre-eminently advised a modification of Method B of Hollow Inlays as follows:

After obtaining a matrix of pure gold with center cut out, swage a reinforcing matrix of 29 gauge 22 K. gold, which is to extend only to the margin of the first matrix, but not to overlap on the overlap of the original matrix—the center is also cut from the reinforcing matrix; the two matrices are then sweated together with 22 K. solder; two contour pieces of 29 gauge 22 K. are swaged, sweated together with same grade solder and then the reinforced contour cusp piece are soldered with 22 K. solder.

This gives an inlay abutment which will withstand any stress; and has the minimum of solder, which will not be disturbed in any subsequent soldering. Such an inlay may also be used to anchor any of the various attachments for partial plates.

Perhaps some have noticed that I have not coupled the names of practitioners with the description of these methods, and have wondered at it, but the fact is that not any one of the methods is in all details entirely original with any one man. Many men have studied, experimented, written and demonstrated upon gold inlays, among whom there comes to my mind the names of Ames, Alexander, Batchellor, Hinman, Perry, Swasey, Tileston, Thompson, Trude and Wassall. The profession is debtor to the genius of each of these.

You may be convinced of this, that each of the many methods that have been devised and demonstrated are specially adapted to some class of cavity—the exigencies of which have justified the formulation of the method and that perchance the main criticism that may be directed against it and its advocate is that he in his enthusiasm has advised it for all cases.

Centuries ago a wise old philosopher said: "I have come to learn that there is no doctrine that is so absolutely false as to be utterly devoid of truth."

And the central thought of that utterance is true today. There are few methods so absolutely faulty as to be utterly devoid of value.

Items of Interest.

OBITUARY

DR. JAMES S. KNAPP.

The dean of the dental profession in this city, Dr. James S. Knapp, died Thursday, December 26, 1907, at his home, 1017 Second street, at the age of 84 years. He has been a practicing dentist in New Orleans for sixty years, and as far back as the visit of Henry Clay to New Orleans in the '50's he did dental work for the famous statesman.

Dr. Knapp had been quite well and active for a man of his age, and at all annual gatherings of the dentists he was an honored member, and read papers at nearly all of them which were listened to with interest, and he was looked upon as the oldest and most experienced dentist in the South.

Dr. Knapp was born in Guilford, N. Y. He was graduated in dentistry at the Ohio College of Dental Surgery, then a famous institution. He practiced continuously in this city for a great number of years, and for many years was dean of the dental college.

He has been president of the state dental association and was a member of all the leading dental associations of America. For many years he was, with other prominent citizens, a member of the American Academy of Sciences in this city, one of the famous institutions of past years.

Dr. Knapp was always a leader in dental education and spent his money freely in that direction at a time when the college was not self-sustaining, as it is at present, and has aided many young dentists, besides bringing up four young sons in the profession.

Dr. Knapp came of a famous family. He was a son of Dr. Colby Knapp, of Knappsburg, N. Y., which is the family home, and where five generations of Knapps are buried in the family burial ground. He was a brother-in-law of Dickinson, the famous United States senator from New York, who was also lieutenant governor at one time. He was a friend of Daniel Webster and Henry Clay.

Dr. Knapp in earlier days had a very extensive practice in this city, and was considered one of the leading dentists of the country. He leaves two daughters and four sons—Dr. Knapp's four sons are all dentists—Dr. J. Rollo Knapp, Dr. C. D. Knapp, Dr. W. S. Knapp and Dr. S. B. Knapp.

Dr. Knapp's great-grandfather was of German extraction and emigrated from England to the Colonies before the Revolution. His grandfather, Elihu Murray, was a captain of the Revolutionary army. Lucinda Murray, his mother, was a descendant of a titled French lady, Julie de Cavalarie. Dr. Knapp was the eleventh of thirteen children, and when 17 taught school at or near Binghamton, N. Y., and he taught successfully at other places. He married Miss Emily A. Scott, of Bainbridge, N. Y. Coming to this city in 1845, he pursued his medical and dental studies, and began his practice here.

His wife died in 1871. He helped organize the dental college in 1867. He was organizer of the first dental journal in this section in the '50's.—*The Ethical Dentist.*

SOUTHERN WISCONSIN DENTAL ASSOCIATION.

The Southern Wisconsin Dental Association will hold its fourteenth meeting in Platteville, Wis., May 27 and 28, 1908. A hearty invitation is extended to all ethical practitioners.

NEBRASKA STATE DENTAL SOCIETY.

The thirty-second annual meeting of the Nebraska State Dental Society will be held in Omaha, May 19, 20 and 21, 1908, at the Creighton Dental College. All reputable members of the profession are cordially invited to attend.

ALUMNI ASSOCIATION OF ST. LOUIS.

The Alumni Association of the St. Louis Dental College wish to announce that their annual clinic will be held at the College building, Grand and Caroline street, Tuesday and Wednesday, May 19 and 20, 1908.

A good program is being arranged and all graduates of the college are respectfully requested to be present and aid in making this meeting a success.

NORTHERN INDIANA DENTAL SOCIETY.

The twentieth annual meeting of the Northern Indiana Dental Society will be held at Fort Wayne, Ind., September 8, 9, 1908. An excellent meeting is expected.

SOUTHWESTERN MICHIGAN DENTAL SOCIETY.

The next meeting of the Southwestern Michigan Dental Society will be held in Jackson April 14-15. For information address C. W. Johnson, Lawton, Mich., Secretary.

MINNESOTA STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Minnesota State Board of Dental Examiners will be held at the College of Dentistry, University of Minnesota, in Minneapolis on March 10, 11 and 12, 1908. All applications must be in the hands of the Secretary by February 25.

For further information address Dr. G. S. Todd, Lake City, Minn.

NORTHERN OHIO DENTAL ASSOCIATION.

The fifty-first annual meeting of the Northern Ohio Dental Association will be held at Canton, Ohio, May 26, 27, 28, 1908.

The sessions will be held in the city's auditorium, one of the largest in the middle west, with headquarters at the Courtland hotel. There are numerous other hotels in Canton, so there will be accommodations for all. Hotel rates may be had at from $1.50 to $5.00 per day, American plan.

Canton is essentially a dental manufacturing town, having three large and busy plants. The exhibits will be first class.

The committees are sparing no time nor expense to make this an especially attractive meeting. The program will be up to the standard of previous years. Men of international reputation have been secured to read papers and clinics.

Remember the time and place, May 26, 27, 28, 1908, Canton, Ohio.

The Executive Committee,

W. H. WHITSLAR,
J. H. WIBLE,
F. M. CASTO, Chairman.

SEMI-CENTENNIAL JUBILEE MEETING OF THE INDIANA STATE DENTAL ASSOCIATION.

The Indiana State Dental Association will celebrate its Fifteenth Anniversary, June 4, 5, 6, at Indianapolis with one of the largest meetings ever held.

The state associations of Michigan, Ohio, Kentucky and Illinois have accepted invitations to meet with us.

There will be five essayists: Drs. G. V. Black, Illinois; T. W. Brophy, Illinois; Charles Zederbaum, Michigan; M. H. Fletcher, Ohio; H. B. Holmes, Kentucky.

There will be fifty clinicians from these four states and practically all other state associations will be represented by clinicians.

All ethical dentists are invited, as this will be the big meeting of the year.

Very truly,

D. A. HOUSE.

MISSOURI STATE DENTAL ASSOCIATION.

The forty-third annual meeting of the Missouri State Dental Association will convene in St. Louis June 1, 2, 3, 1908, at the Planters Hotel. Rates 1.50 and up per day. Efforts are being made to make this the most successful meeting in the history of the association. Distinguished members of the profession from out of the state will be present. All ethical members of the profession are cordially invited to come.

O. J. FRUTH,
J. F. AUSTIN,
P. H. MORRISON,
Executive Committee.
St. Louis, Mo.

J. W. HULL, Pres., Kansas City, Mo.
E. P. DAMERON, Cor. Sec., St. Louis, Mo.

MISCELLANEOUS

A POINTER.

Wrapping nozzle of hot air syringe with asbestos paper and fastening on by means of fine binding wire will prevent frequently burning the lips. Especially is this good working on children and nervous patients.—*J. B. Daugherty, Pawpaw, Ill.*

COCAINE WORRY.

What can be done by treatment consists of laying patient on his back and give inhalations of ammonia or of amyl nitrite. But my opinion is that if dentists would study cocaine, its effects and after-effects, and would live up to it, there would be no danger from its use directly or in preparations put out by the several houses.—*Dental Brief.*

WEIGHT ON DENTURES.

After a careful study of this annoying class of dentures, I have come to a positive conclusion that weight beyond that which is absolutely necessary in the construction of any given class of denture is a detriment instead of an advantage, as far as its utility is concerned.—*Dr. W. M. Bartlett, Summary.*

CARBORUNDUM POWDER.

When carborundum wheels, disks, etc., become clogged with amalgum or worn too smooth to cut, they can be speedily restored to usefulness by dipping in water or glycerine and then in carbo-powder, using them, repeating the process same as using copper-carbo disks. Disks of all kinds will cut much faster with the powder than new ones will without it. Try it.—*J. J. Rapp, Summary.*

TO WHOM DENTAL LICENSES ARE ISSUED IN JAPAN.

Ambassador Luke E. Wright, of Tokyo, transmits translations of recent ordinances relating to licenses for the practice of medicine and dentistry in Japan. The government will grant licenses for their practice to graduates of foreign medical and dental colleges, or those who have practiced such professions in foreign countries, who may satisfy the Japanese government requirements.—*Consular and Trade Reports.*

THREE USEFUL POINTERS.

To take vulcanized rubber from teeth taken off plates.—Place teeth in a small, wide-mouthed bottle containing chloroform, over night. The rubber may be removed as easily as so much charred cork.—*J. W. Marshall, Cosmos.*

HYPERTROPHIED TISSUE.

Hyperthorphied Tissue.

The following mouth wash has proved vary valuable in assisting the abortion of hypertrophied tissue: Zinci chloridii, gr. v; auquæ menth. prep., 8 3j.—*H. Chapman, Dental Record.*

ACUTE INFLAMMATION OF THE PERIDENTAL MEMBRANE.

Having assurance that the apex of the root is open, place in the pulp chamber a piece of solidified formaldehyde the size of a pinhead and seal in; relief will come, if not immediately, within a few hours, all causes of congestion being completely killed.—*F. B. Lawrence, Western Dental Journal.*

TO STOP PAIN CAUSED BY FORMALIN AND CREOSOTE.

Occasionally during treatment a small amount of the formalin-creosote preparations commonly used for treatment will by accident come in contact with the mucous membrane of the mouth and therefore cause severe pain. A pledget of cotton saturated with a 3 per cent solution of eucaine and applied to the surface affected will give immediate relief.—*Roy C. Rowley, D. D. S., Brief.*

DRAINAGE OF ABSCESSES.

In all cases of abscesses in the mucous tissues of the mouth I insist on the use of 95 per cent carbolic acid on the tent. A very small amount retained in the gauze or cotton is sufficient to cauterize the lips of the incision, making the opening freer, promoting the egress of pus and preventing the ingress of new infective material.—*G. V. Black, Northwestern Dental Journal.*

SETTING A SHELL CROWN.

To get the closest adaptation drill a hole through the thickest part of the cusp, tap it and fit a piece of threaded gold wire. In setting the crown remove the wire and allow the surplus of cement to escape through the hole; when the cement is nearly hard clear it away from the hole and screw in the gold wire. When the cement is thoroughly hard cut the wire flush and polish.—*R. M. Sanger, Items of Interest.*

PYORRHEA FROM MILK DIET.

Mr. Goadby gives a very detailed bacteriological analysis of thirty-six cases in which general symptoms were present and describes the cultural characters of the organisms isolated. In certain cases he isolated a lactose fermenting bacillus, and this organism would seem to have suggested to him that the infection in pyorrhea alveolaris may come from contaminated milk. Mr. Goadby also refers to the point that pyorrhea alveolaris is a frequent sequelæ of infectious disease, during which the patient has for some time been upon a milk diet, and that the disease frequently occurs in several members of the same family, and would seem to consider these points evidence that milk may be the original source of infection.—*Dr. G. B. Web, Dental Magazine.*

REPAIRING BRIDGES.

The following is a method that I have used in repairing bridges where pin facings have been used, by substituting Steele's interchangeable facings for the pin facings: Grind the pins flush with the body of the bridge and fit to the latter a backing of one of Steele's interchangeable facings which will correspond to the space. Cement the backing to the bridge; then, with the drill of the S. S. W. anchor drill set, drill through the backing into the body of the bridge as far as the drill will allow. One hole at each corner will be all that is necessary. Tap the holes with the anchor tap and screw, and insert a gold anchor screw wire into each hole. Grind the wires flush with the backing, and set the facing in the usual way. A repair made in this manner will be neat and strong.—*P. Neff Myers, Cosmos.*

VOLASEM.

The preparation is said to be composed of fluid extract violet, fluid extract strophanthus, fluid extract calabar bean or physostigmine (physostigmine is the active principle of calabar bean). The violet is evidently used to mask the extremely bitter taste and somewhat unpleasant odor of the strophanthin and physostigmine. Strophanthin is one of the most powerful of the heart stimulants and has much the same action as adrenalin, *i. e.*, stimulates the heart and slows the pulse. In volasem we have a preparation which given in a little water before the operation, assuring the patient that it will prevent an unpleasant effect, has a powerful mental as well as physiological action.—*Dr. W. H. Jones, Items.*

PERSONAL AND GENERAL

Rodgers-Beith.—Dr. H. B. Rodgers and Miss Anna Beith, of Watsonville, Cal., were married January 19.

Reiss-Weaver.—Dr. Fred Reiss and Miss Emily Weaver, both of Louisville, Ky., were married January 29.

Florida Dental Society.—The next annual meeting of the Florida Dental Society will be held in Tampa, May 21.

Central Illinois Dental Association.—The fourth annual meeting of the Central Illinois Dental Association was held at Pana, February 18.

Held Annual Reunion.—The Dental Alumni, of the University of Buffalo, held its twelfth annual clinic and reunion at the University February 28 and 29.

Central Dental Association. The Central Dental Association held its twenty-eighth annual banquet February 17 in the Hotel Knickerbocker, at New York.

Dentists Dissolved Partnership.—Dr. A. R. Church and Dr. J. R. Padin, of Valparaiso, Ind., have dissolved partnership. Dr. Church will open an office in Peru.

Dentist Receives Cash for Patent.—Dr. M. G. Roskind, of Columbia, Tenn., received $2,500 from a firm in Philadelphia in payment of his recent patent of an invisible bifocal.

Luzerne and Lackawanna Dental Society.—The monthly meeting of the Luzerne and Lackawanna Dental Society was held at Wilkesbarre, Pa., February 18. The next meeting will be held at Scranton a month hence.

Will and Grundy Counties Dental Association.—The annual meeting of the Will and Grundy Counties Dental Association was held at Joliet, February 11. Drs. W. D. Moore, Louis Ladewich and A. D. Black, of Chicago, were among the speakers.

Gives Talk to Teachers.—Dr. T. Franklin Gifford, representing the association of dentists at Sandusky, Ohio, delivered an address before the teachers of that city February 13, expressing his belief that children ought to be taught to take care of their teeth in the public schools.

Ohio Dental Crop.—During the year of 1907 there were 104 certificates issued in Ohio to practice dentistry, 91 of which were on examination. A total of 4,166 certificates have been issued since the organization of the board, May 31, 1892. It is estimated that there are now 3,000 practicing dentists in that state.

Dentist Will Recover.—Dr. J. L. Whinery, the prominent dentist of Marshalltown, Iowa, who underwent a most peculiar operation for tumor of the brain at a hospital at Rochester, Minn., a short time ago, gives promise of a complete recovery. A later examination developed that he was suffering with a clot on the brain.

False Teeth Caused Suit.—In a suit over a set of false teeth, which he alleged failed to fit, James G. Morrison, a provision dealer of Boston, Mass., recovered a verdict of $93, February 13, in the seventh session of the superior court against Dr. Geo. L. Tulloch. According to the plaintiff, the dentist agreed to make him a set of false teeth for $80.

Removals.—Drs. H. H. Weickel, from Fond du Lac, Wis., to Milwaukee, Wis.; F. J. Meek, from Canal Dover, Ohio, to Grand Junction, Colo.; E. R. Riggs, from Sullivan, Ind., to Princeton, Ind.; C. E. Beeman, from Springville, Iowa, to Cedar Rapids, Iowa; G. H Hunter, from McArthur, Ohio, to Chillicothe, Ohio; O. V. Calkins, from Shawano, Wis., to New London, Wis.; Dr. Carter, from Kansas City, Mo., to Browning, Mo.; M. S. Fleming, from New Orleans, La., to Biloxi, Miss.; R. K. Harris, from Whitewright, Texas, to Weatherford, Texas; S. C. Fisher, from St. Jo, Texas, to Denison, Texas.; C. P. Norris, from Lillington, N. C., to Durham, N. C.; J. C. Johnson, from Benson, N. C., to Durham, N. C.; H. B. Strain, from Darlington, Ind., to Crawfordsville, Ind.; A. R. Church, from Hebron, Ind., to Peru, Ind.; H. S. Kiess, from Williamsport, Pa., to Blossburg, Pa.; H. J. and E. W. Meis, from Dell Rapids, S. D., to Sioux City, Iowa.

NECROLOGICAL.

Dr. E. J. Greene, a dentist at Peoria, Ill., died February 3.

Dr. J. H. Ritchie, a dentist at Los Angeles, Cal., died January 28.

Dr. Charles Chester, a dentist at Milwaukee, Wis., died February 18.

Dr. C. S. Tuller, a dentist at Laurel, Miss., died January 21 of acute appendicitis.

Dr. O. W. Kennedy, a dentist at Aylmer, Ont., died January 29. He was 58 years of age.

Dr. Fayette Herrick, a dentist at Greenville, Pa., died January 22. He was 74 years of age.

Dr. H. G. Saunders, a dentist at St. Elmo, Tenn., died January 23. He was 47 years of age.

Dr. A. A. Wofford, a dentist at Columbus, Miss., died February 12. He was 65 years of age.

Dr. Geo. A. Foster, a dentist at Stamping Ground, Ky., died January 24. He was 49 years of age.

Dr. Charles F. Matteson, a dentist of Chicago, died February 2. He had practiced dentistry since 1869.

DENTAL PATENTS

Fig. 1.

872,908. Dental Floss—John D. Cutter, New York, N. Y. Filed April 9, 1907. Serial No. 367,242. A dental floss consisting of a series of threads laid parallel and in proximity to each other, and a covering of wax for the said threads.

Fig. 2.

867,264. Dental Implement—Charles S. Evans, Dayton, Ohio. Filed December 10, 1906. Serial No. 347,034. 1. A dental implement of the type specified, comprising a cylindrical body having a longitudinal slot on one side and extending the length thereof, and an out-turned annular groove around its circumference, the end of said body portion terminating in forks, a screw penetrating the portion of the implement lying between the cylindrical body and the forks, a washer penetrated by said screw, and a thumb nut having an extended portion and adapted to engage the screw, as herein shown and described.

Fig. 3.

874,489. Dental Pliers—Gilbert J. Clark, Mayville, Wis. Filed December 24, 1906. Serial No. 349,299. 1. A pair of dental pliers comprising a set of operating handles and jaws pivotally connected together, a male die conforming in shape to the vertical walls of a dental crown and inversely conforming to the shape of the vertical walls of a tooth, said die being formed integrally with or rigidly affixed to one of said jaws, a female die conforming in shape to and adapted to register with the male die and also formed integrally with or rigidly affixed to the opposing jaw of said pliers.

Fig. 4.

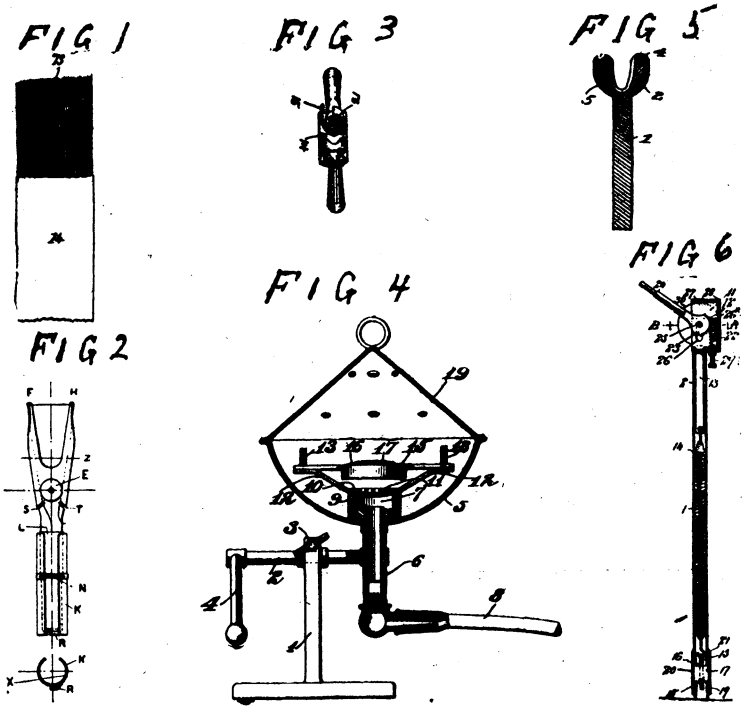
867,193. Dental Soldering Apparatus—Edward Flannigain, St. Louis, Mo., assignor to the United Appliance Manufacturing Company, St. Louis, Mo., a corporation of Missouri. Filed May 20, 1907. Serial No. 374,588. 1. A soldering apparatus comprising a burner swiveled on a horizontal axis and a work holder movable with the burner and swiveled with respect to the axis thereof.

Fig. 5.

874,379. Dental Crown-Driver. Clarence R. Averill, Webster, N. Y. Filed Aug. 24, 1907. Serial No. 389,947. 1. A dental crown-driver comprising a suitable support and a container carried thereby and having opposite portions of its wall provided with cut-away portions.

Fig. 6.

869,562. Dental Engine—James F. Hardy, New York, N. Y., assignor to Consolidated Dental Manufacturing Company, New York, N. Y., a corporation of New York. Filed November 23, 1906. Serial No. 344,732.



1. The combination with a hollow standard, an arm pivotally secured thereto, of a counterbalance spring housed within the standard and a vertically movable slide housed within the standard and forming an intermediate connection between the arm and the spring.

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Excelso Broaches	14
Extraordinary Book Offer	11
Farnum Dental Laboratory Co	198
Gilbert's Vitroid Cement	48
Goldsmith Bros., Chicago, Ill	17
Glogau's Alcohol Gas Stove	37
Gold Inlay Machine	30
Griswold Sterilizing Tray	18
Hall & Ruckel	0
Harvard Co	42
Hisey Alvatunder	18
Hiseys Nerve Preservative	32
Ideal Inlay Machine	4
International Casting Machine	49-50
Indiana Dental College, Indianapolis, Ind	28
Kress & Owen Co., New York	00
Lavoris Chemical Co	7
Lambert Pharmacal Co., St. Louis	F. F. R.
Lauderdale Crown System	27
Lee Smith & Son	2
Louisville Dental Laboratory	5
Matteson Furnace	38
Metaline Carving Compound	28
Mylocal	6
Modeling Compound	52
Mounted Carborundum Points	22
Mosher, L. D.	7
Nerve Qui-e-tus	39
Nolde Dental Mfg. Co., John T., St. Louis	26
North Western University Dental School	25
O'Brien Worthen Co	41
Overdier Coat Co	25
Office Coat Co	38
Peck's Inlay Compouud	198
Permaneo	21
Preparation Bottle	00
Puscure	47
Reese & Wiedhofft	4
Ritter Dental Mfg. Co	1
Ralph Bradner Co	32
Skinner, F. H., DDS	5
Tooth Cleaning Mandrels	46
Traun Rubber Co	42
Unique Engine	48
University of Illinois	15, 16
Waites Anesthetic	50
Wax and investing compound for Cast Gold Inlays	8
Williams, J. A	33, 35
Wilson's Anaesthetic	27

Sozodont in Riggs Disease

The following is an extract from a letter by a former instructor in one of the largest dental colleges in the United States:

"REGARDING the use of SOZODONT Tooth Paste as a massage for the gums after treatment for Riggs Disease, I will say that I have used SOZODONT Tooth Paste as suggested. Good results followed its use not only in the after-treatment of Riggs Disease, but also as a massage for the gums after removing salivary calculus and injury to the gums from use of rubber dam, also the injuries resulting from grinding teeth while adjusting crowns and abutments for bridge work. SOZODONT Tooth Paste is particularly handy because the patient can be instructed to apply it and save the time of the dentist and a visit to his office. I have fairly preached this use of the SOZODONT Paste to dentists I have met. I do not stop at recommending the SOZODONT Paste, but urge the use of SOZODONT Liquid, injecting full strength in the pyorrhea pockets after the serumal deposits have been removed. SOZODONT Liquid cannot be applied by patients as conveniently as the SOZODONT Paste, but in the hands of the dentist its application is easily made by means of an abscess syringe or by saturating a pledgit of cotton and forcing this into the pockets by means of pliers. SOZODONT Liquid and SOZODONT Paste, while highly antiseptic and stimulating, can be used continuously without danger of over-medicating the mucous membrane of the mouth and gums. This is not true of any other dentifrice I have experimented with."

It might be interesting to the dental profession to know that we have many unsolicited testimonials from dentists, along the lines above mentioned. SOZODONT for experimental purposes, also litmus paper for testing, appointment cards, prescription pads, and literature, will be sent to dentists upon receipt of their professional card.

HALL & RUCKEL, New York, City